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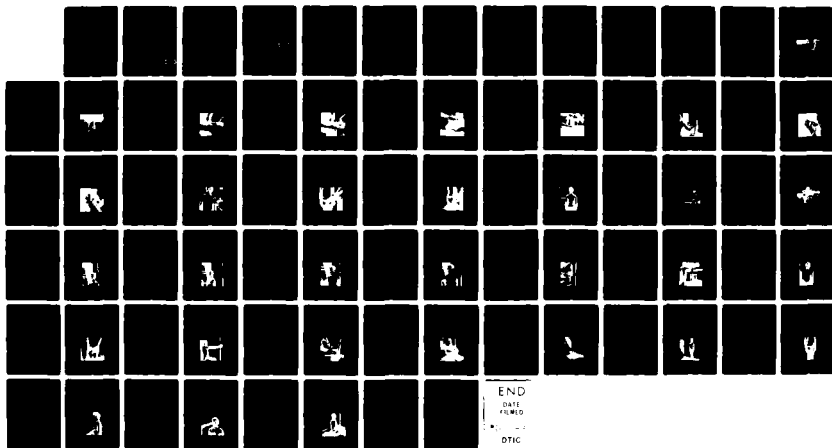
AUSTRALIAN TRI-SERVICE ANTHROPOMETRIC SURVEY 1977 PART
3 SURVEY RESULTS... (U) AERONAUTICAL RESEARCH LABS
MELBOURNE (AUSTRALIA) K C HENDY JUL 79 ARL/SYS-15-PT-3

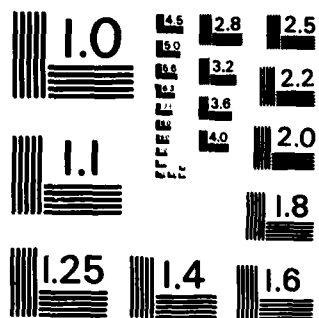
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AERONAUTICAL RESEARCH LABORATORIES

MELBOURNE, VICTORIA

SYSTEMS REPORT 15

AUSTRALIAN
TRI-SERVICE ANTHROPOMETRIC SURVEY, 1977:
PART 3. Survey results: Air Force TRANSPORT and
CATERING group

by

K. C. HENDY

Approved for Public Release



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**AUSTRALIAN
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SUMMARY

An anthropometric survey of approximately 3000 male members of the three Australian military branches was conducted during 1977. Part 3 of this nine-part document contains the results of the analysis for the Air Force combined TRANSPORT and CATERING group data. This group, of 312 subjects in total, is a combination of the TRANSPORT and CATERING groups of the original sample.

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ABSTRACT

An anthropometric survey of approximately 3000 male members of the three Australian military branches was conducted during 1977. Part 3 of this nine-part document contains the results of the analysis for the Air Force combined TRANSPORT and CATERING group data. This group, of 312 subjects in total, is a combination of the TRANSPORT and CATERING groups of the original sample.

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TABLE 21: Elbow Rest Height

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TABLE 26: Buttock-Knee Length

TABLE 27: Thigh Clearance Height

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TABLE 29: Stature

TABLE 30: Crotch Height

TABLE 31: Chest Depth

TABLE 32: Head Breadth

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DISTRIBUTION

1. INTRODUCTION

Part 3 of Systems Report 15 contains the results of an analysis performed on the combined Air Force TRANSPORT and CATERING group data. The rationale for the combination of these groups is contained in Part 1 of Reference 1. Other groups subjected to separate analysis are reported in Parts 2 to 9 of Reference 1.

The composition of this group is as follows:

		Number
AIR FORCE		
Transport		114
Catering		198
		—
<i>Total</i>		312
		—

An analysis was performed on the combined TRANSPORT and CATERING group data and summary statistics derived. The results of this analysis are presented in Tables 1 to 33. An index to the tabulated results appears in the Contents listing to this document. For convenience in using the information, a Visual Index and alphabetical listing precedes Table 1. The photographs accompanying the Tables are to illustrate technique only.

2. SITTING POSTURE

For all sitting measurements the height of the hydraulic stool was adjusted so that with the subject sitting erect, back free of the wall, the line joining the femoral marks was horizontal and with feet flat on the floor the line joining the upper and lower fibular marks was vertical.

Without changing the position of his legs after adjusting the stool the subject sat erect, back free of the wall with the trunk straight, upper arms vertical, elbows resting lightly against the sides and the forearms extended so that the hands rested on mid-thighs. The shoulders were equally relaxed.

Note: In Tables 1 to 33

— unsmoothed data and 'Normal' fit
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REFERENCES

1. Hendy, K.C.: Australian Tri-service Anthropometric Survey, 1977:

PART 1. Survey planning, conduct, data handling and methods of analysis.

PART 2. Survey results: Combined services AIRCREW group.

PART 4. Survey results: Airforce TECHNICAL and CLERICAL group.

PART 5. Survey results: Army CATERING group.

PART 6. Survey results: Army TECHNICAL group.

PART 7. Survey results: Army WEAPON USERS and OTHERS group.

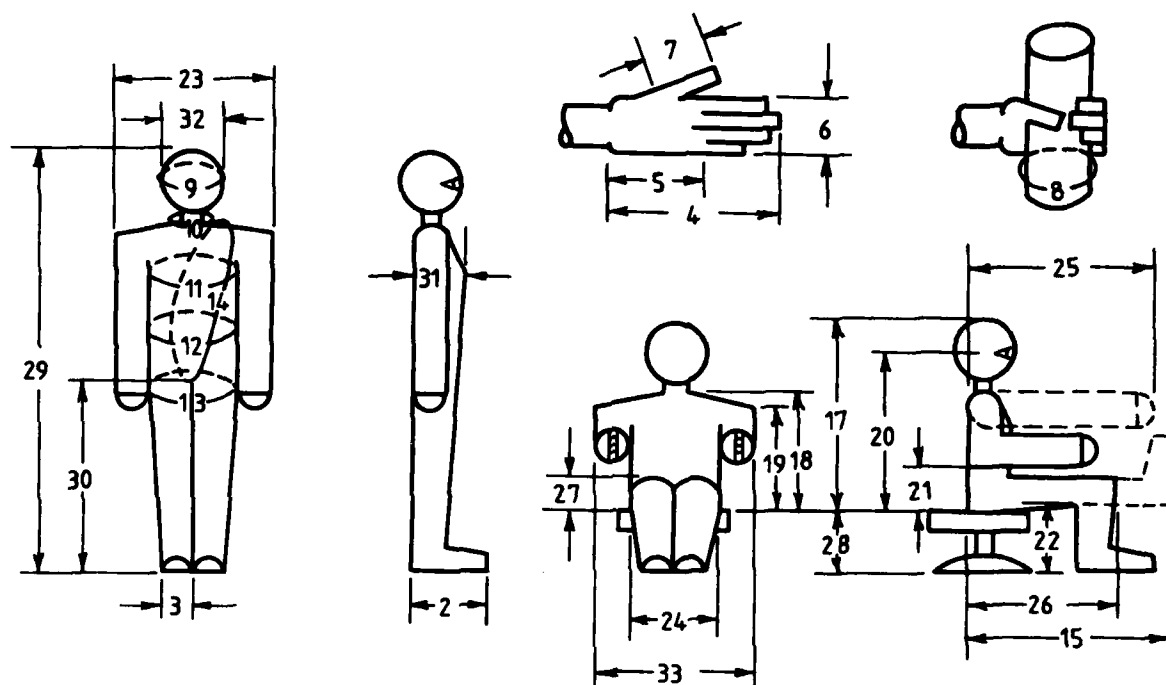
PART 8. Survey results: Navy CLEARANCE DIVER group.

PART 9. Survey results: Navy CONSOLIDATION group.

Aeronautical Research Laboratories, Systems Report 15. Fishermen's Bend, Melbourne, Australia, 1979.

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VISUAL INDEX



Measurement	Table	Measurement	Table
Acromial Height—Sitting	19	Head Circumference	9
Age	1	Hip Breadth	24
Bideltoid Breadth	23	Inner Hand Grip Circumference	8
Buttock Circumference	13	Inter-Elbow Breadth	33
Buttock-Heel Length	15	Mass	16
Buttock-Knee Length	26	Neck Circumference	10
Chest Circumference	11	Palm Length	5
Chest Depth	31	Popliteal Height	22
Crotch Height	30	Shoulder Height—Sitting	18
Elbow Rest Height	21	Sitting Height	17
Eye Height—Sitting	20	Stature	29
Foot Breadth	3	Stool Height	28
Foot Length	2	Thigh Clearance Height	27
Functional Reach	25	Thumb Length	7
Hand Breadth	6	Vertical Trunk Circumference	14
Hand Length	4	Waist Circumference	12
Head Breadth	32		

TABLE 1

Age (years)

Number of Subjects : 312
 Mean : 34.4
 Standard Deviation : 8.4
 Coefficient of Skewness: 0.15
 Coefficient of Kurtosis : -0.81
 Range of Data : 18-53

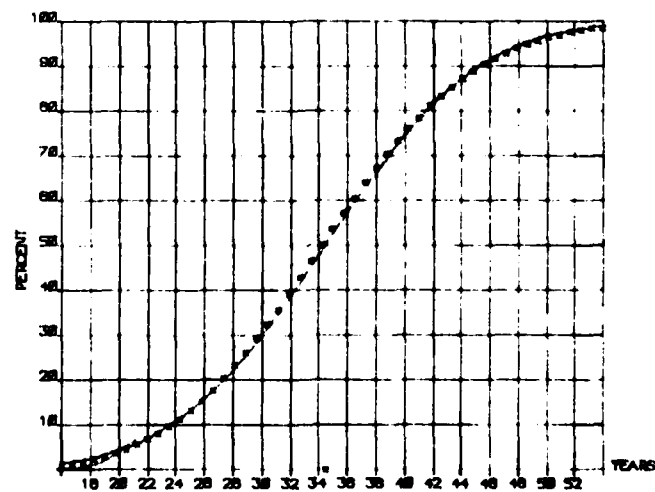
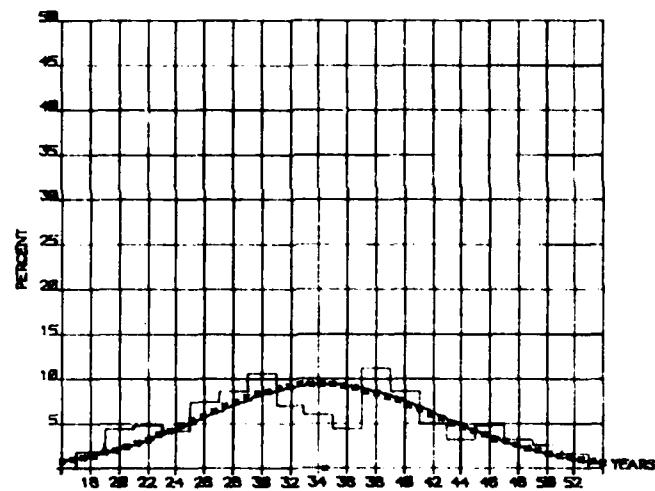


TABLE 2

Foot Length

Subject stands with his left foot in the foot-box, heel against the back wall and the medial side of the foot in contact with the side wall of the box. The datum edge is brought up to touch the most prominent toe. Record the distance of the datum edge from the back wall of the foot-box.

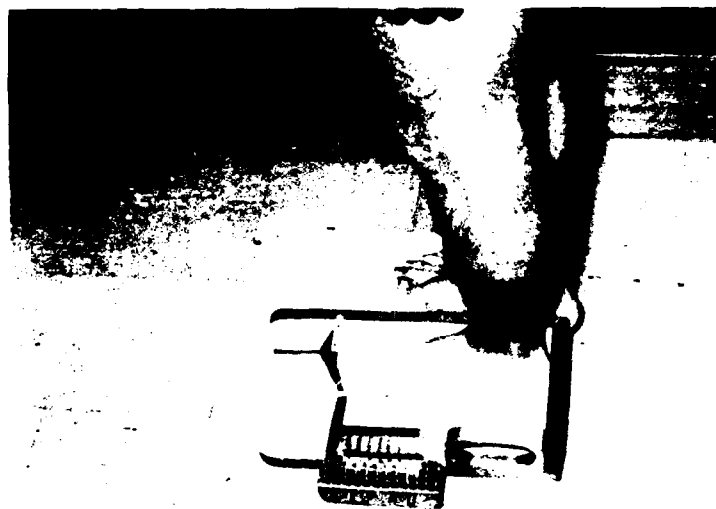
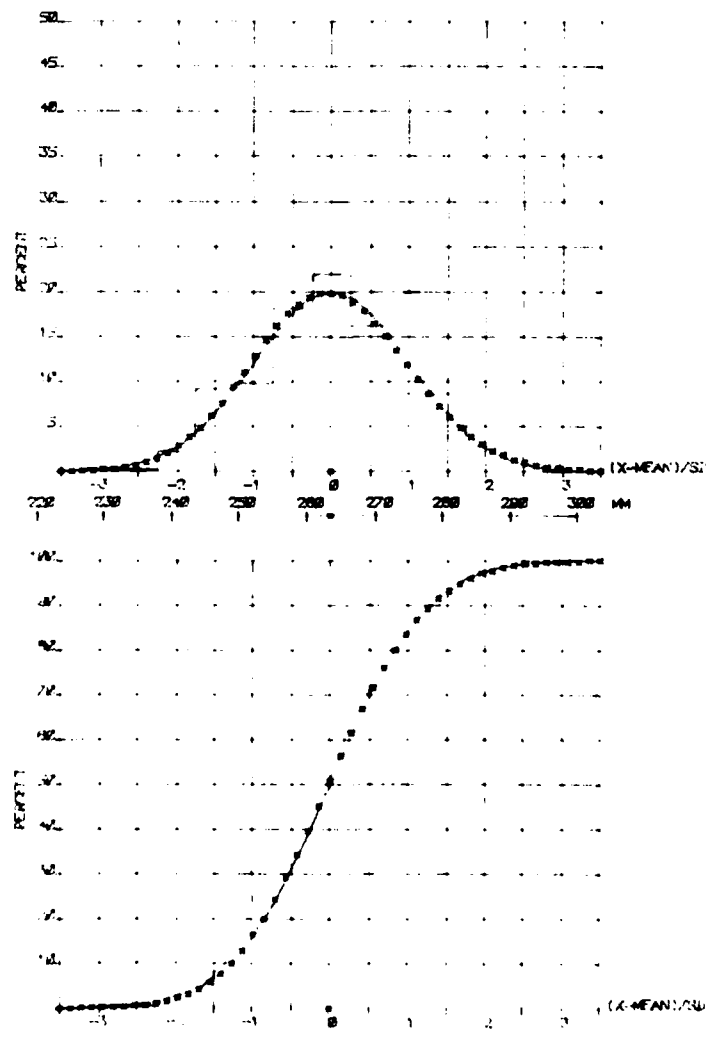


TABLE 2

Foot Length (mm)

Number of Subjects	: 312
Mean	: 263.5
Standard Deviation	: 11.4
Coefficient of Skewness:	0.13
Coefficient of Kurtosis	: -0.14
Range of Data	: 230-301



1st percentile	238
3rd percentile	243
5th percentile	245
10th percentile	249
15th percentile	252
20th percentile	254
25th percentile	256
30th percentile	257
40th percentile	260
50th percentile	263
60th percentile	266
70th percentile	269
75th percentile	271
80th percentile	273
85th percentile	275
90th percentile	278
95th percentile	283
97th percentile	286
99th percentile	291

TABLE 3

Foot Breadth

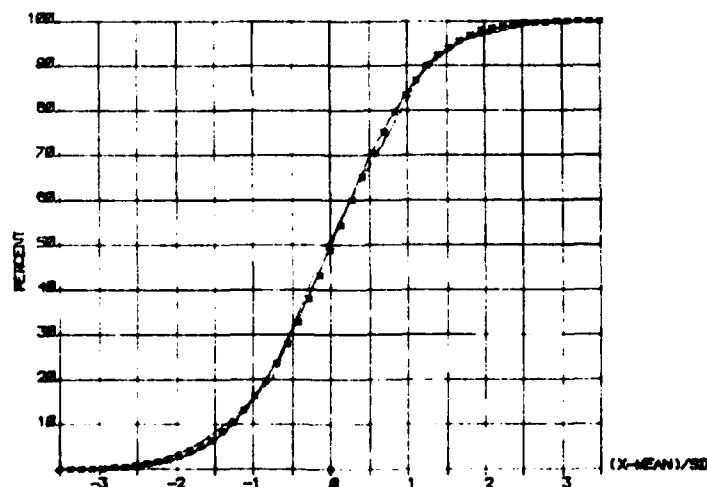
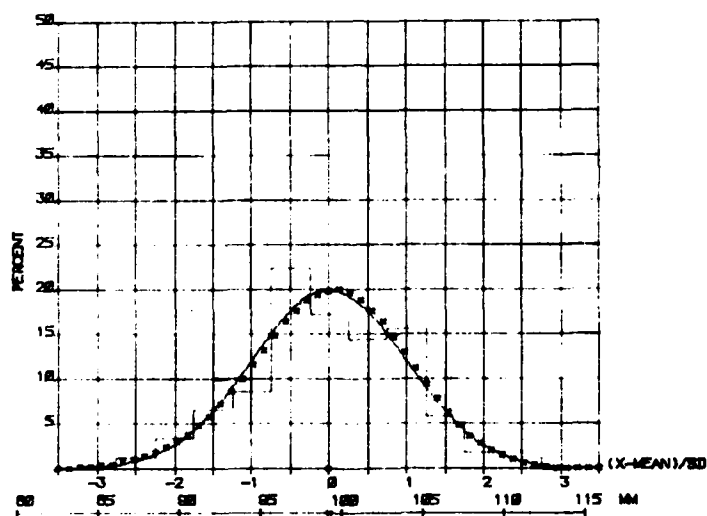
Subject stands with his left foot in the foot-box, heel against the back wall and the medial side of the foot in contact with the side wall of the box. The datum edge is brought into light contact with the widest aspect of the foot. Record the distance of the datum edge from the side wall of the foot-box.



TABLE 3

Foot Breadth (mm)

Number of Subjects : 312
 Mean : 99.2
 Standard Deviation : 4.8
 Coefficient of Skewness: -0.16
 Coefficient of Kurtosis : -0.16
 Range of Data : 86-110



1st percentile	88
3rd percentile	90
5th percentile	91
10th percentile	93
15th percentile	94
20th percentile	95
25th percentile	96
30th percentile	97
40th percentile	98
50th percentile	99
60th percentile	101
70th percentile	102
75th percentile	102
80th percentile	103
85th percentile	104
90th percentile	105
95th percentile	107
97th percentile	108
99th percentile	110

TABLE 4

Hand Length

Subject's left hand is fully extended and supinated in the axis of the forearm, fingers together. With the bar of the sliding calipers parallel to the longitudinal axis of the hand, measure the distance from the tip of the third digit to the wrist mark at the first major skin crease proximal to the base of the hypothenar eminence.

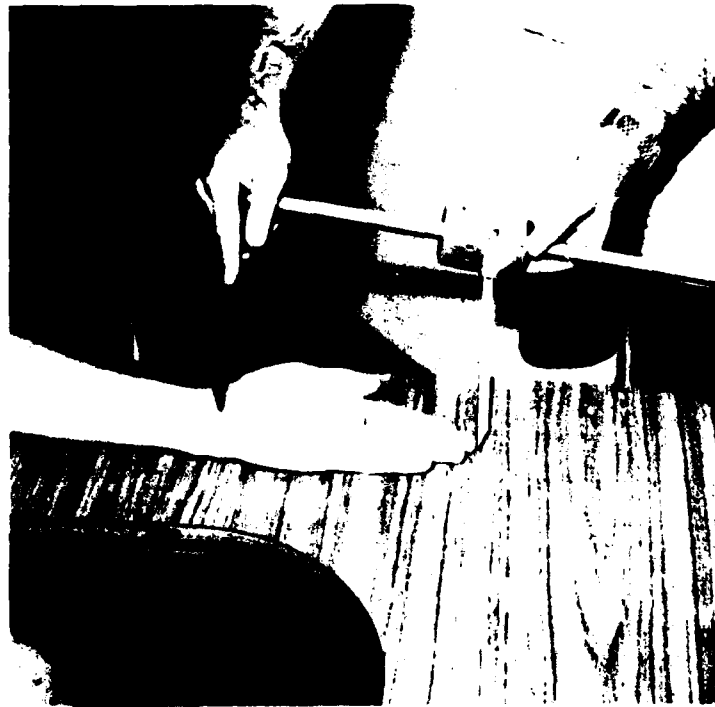
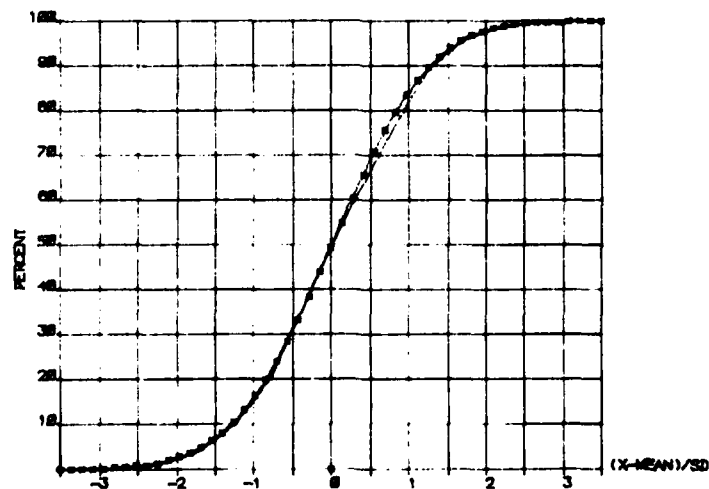
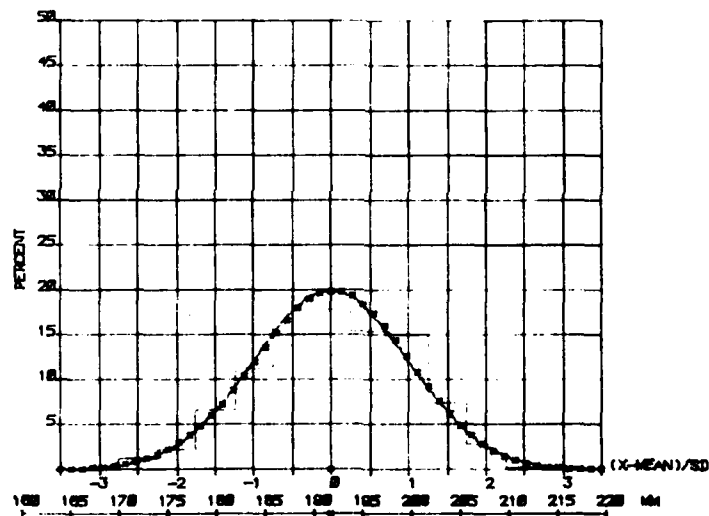


TABLE 4

Hand Length (mm)

Number of Subjects : 312
 Mean : 191.7
 Standard Deviation : 7.9
 Coefficient of Skewness: -0.08
 Coefficient of Kurtosis : -0.28
 Range of Data : 170-214



1st percentile	173
3rd percentile	176
5th percentile	178
10th percentile	181
15th percentile	183
20th percentile	185
25th percentile	186
30th percentile	188
40th percentile	190
50th percentile	192
60th percentile	194
70th percentile	196
75th percentile	197
80th percentile	198
85th percentile	200
90th percentile	202
95th percentile	205
97th percentile	206
99th percentile	210

TABLE 5

Palm Length

Subject's left hand is fully extended and supinated in the axis of the forearm, fingers together. With the bar of the sliding calipers parallel to the longitudinal axis of the hand, measure the distance from the skin fold at the junction of the third digit and the palm of the hand to the wrist mark at the first major skin crease proximal to the base of the hypothenar eminence.

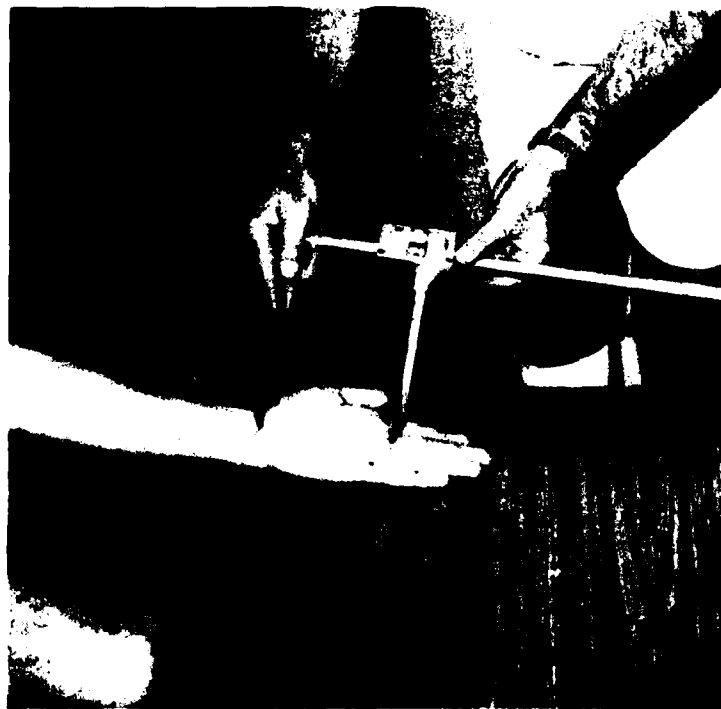
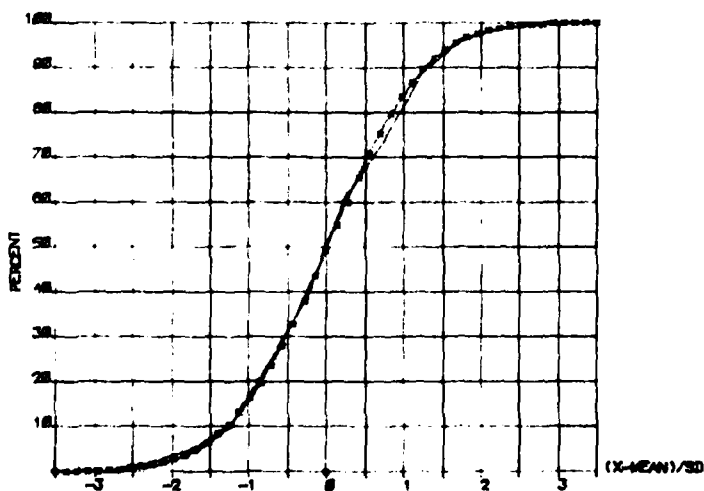
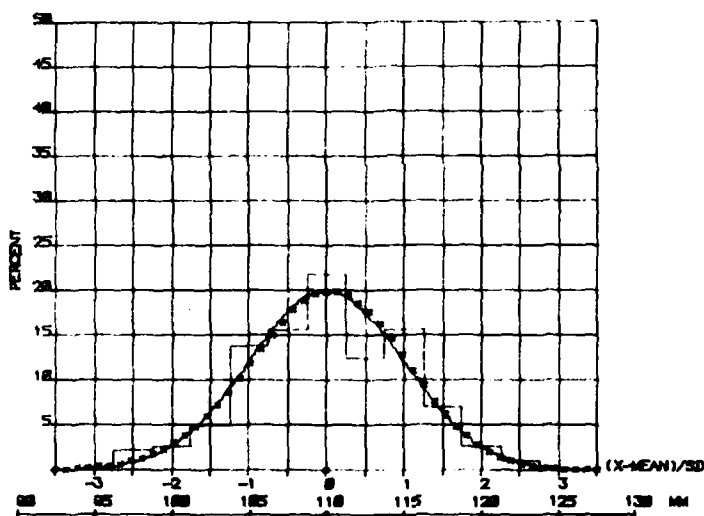


TABLE 5

Palm Length (mm)

Number of Subjects : 312
 Mean : 110.0
 Standard Deviation : 5.0
 Coefficient of Skewness: -0.13
 Coefficient of Kurtosis : -0.22
 Range of Data : 97-122



1st percentile	98
3rd percentile	100
5th percentile	102
10th percentile	103
15th percentile	105
20th percentile	106
25th percentile	107
30th percentile	107
40th percentile	109
50th percentile	110
60th percentile	111
70th percentile	113
75th percentile	113
80th percentile	114
85th percentile	115
90th percentile	116
95th percentile	118
97th percentile	119
99th percentile	121

TABLE 6

Hand Breadth

Subject's left hand is fully extended and supinated in the axis of the forearm, fingers together with the thumb held away from the hand. Using the sliding calipers measure the distance across the distal ends of the metacarpal bones.

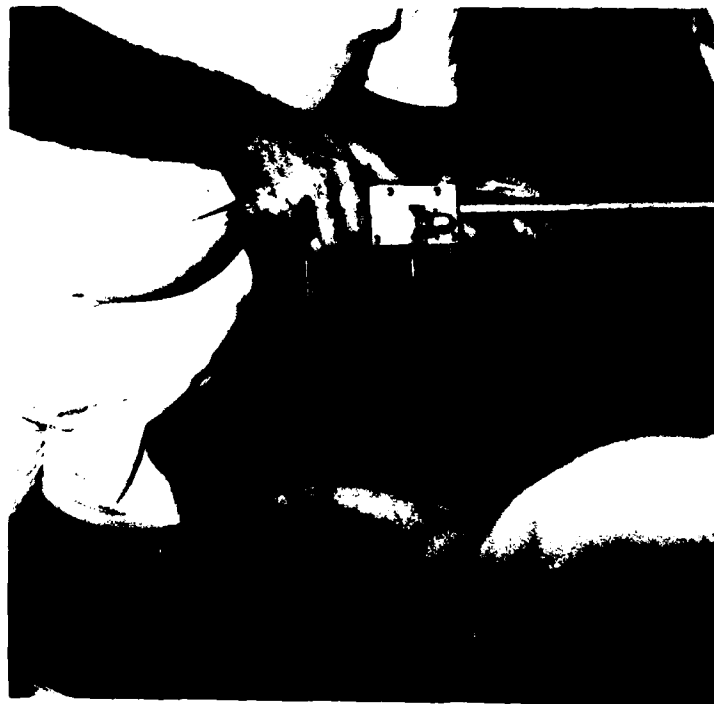
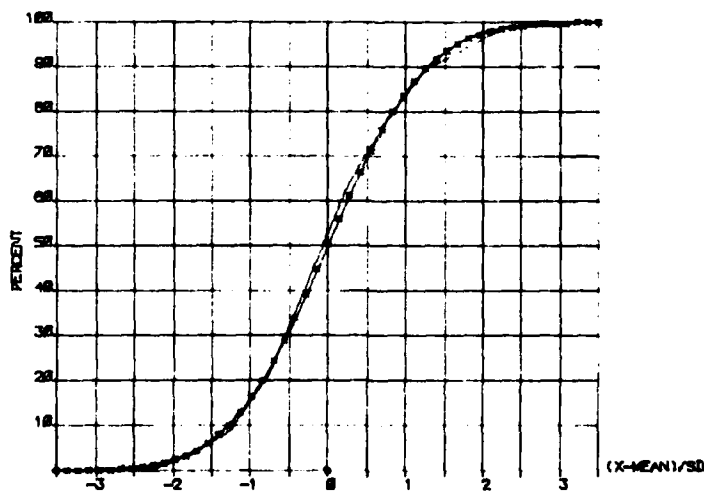
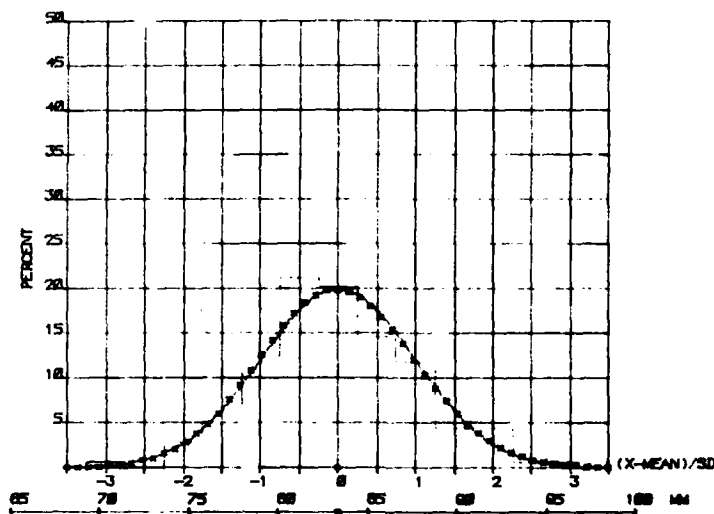


TABLE 6

Hand Breadth (mm)

Number of Subjects : 312
 Mean : 83.3
 Standard Deviation : 4.3
 Coefficient of Skewness: 0.05
 Coefficient of Kurtosis : 0.33
 Range of Data : 70-97



1st percentile	73
3rd percentile	75
5th percentile	76
10th percentile	78
15th percentile	79
20th percentile	80
25th percentile	80
30th percentile	81
40th percentile	82
50th percentile	83
60th percentile	84
70th percentile	86
75th percentile	86
80th percentile	87
85th percentile	88
90th percentile	89
95th percentile	91
97th percentile	92
99th percentile	94

TABLE 7

Thumb Length

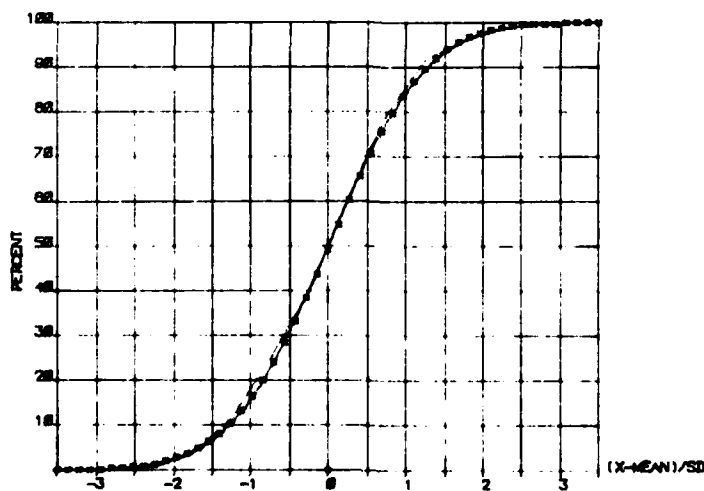
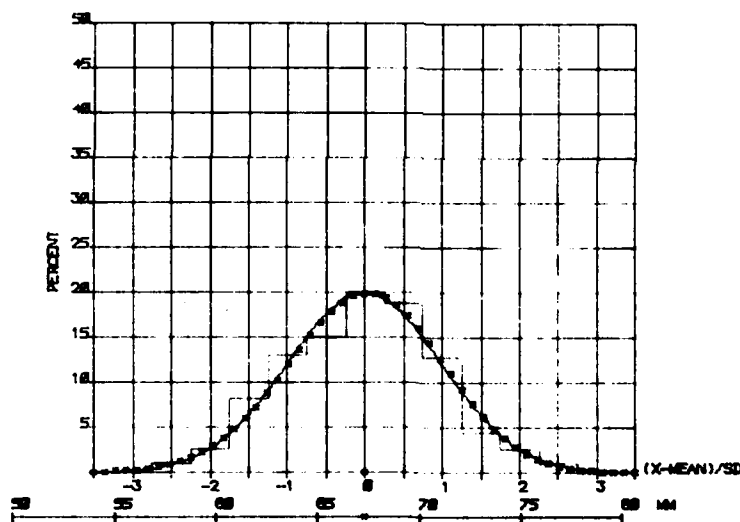
Subject's left hand is fully extended and pronated in the axis of the forearm, fingers together with the thumb held away from the hand. With the bar of the sliding calipers parallel to the longitudinal axis of the thumb, measure the distance from the tip of the thumb to the thumb mark at the first metacarpophalangeal joint.



TABLE 7

Thumb Length (mm)

Number of Subjects : 312
 Mean : 67.3
 Standard Deviation : 3.8
 Coefficient of Skewness: -0.09
 Coefficient of Kurtosis : -0.35
 Range of Data : 57-78



1st percentile 58
 3rd percentile 60
 5th percentile 61
 10th percentile 62
 15th percentile 63
 20th percentile 64
 25th percentile 65
 30th percentile 65
 40th percentile 66
 50th percentile 67
 60th percentile 68
 70th percentile 69
 75th percentile 70
 80th percentile 71
 85th percentile 71
 90th percentile 72
 95th percentile 73
 97th percentile 74
 99th percentile 76

TABLE 8

Inner Hand Grip Circumference

The measuring device is a cone of linearly increasing diameter. The subject grips the cone firmly from behind with the left hand at the maximum diameter at which the thumb and third digit may be lightly opposed. The point of opposition lies over the line scribed on the front of the cone. The Inner Hand Grip Circumference is the circumference of the cone in a horizontal plane containing the point of opposition.

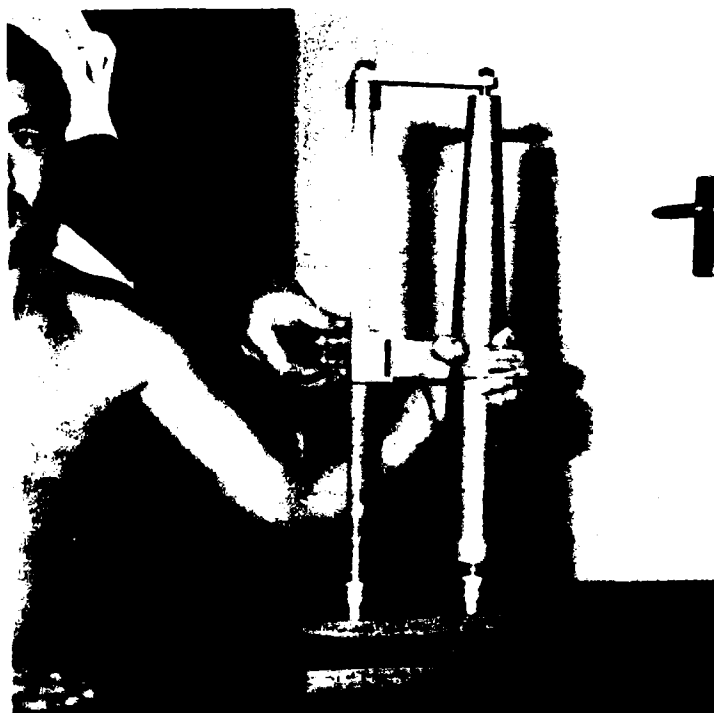
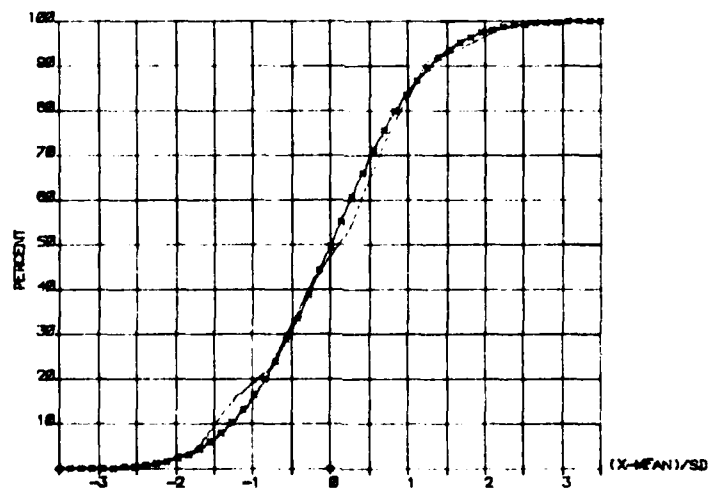
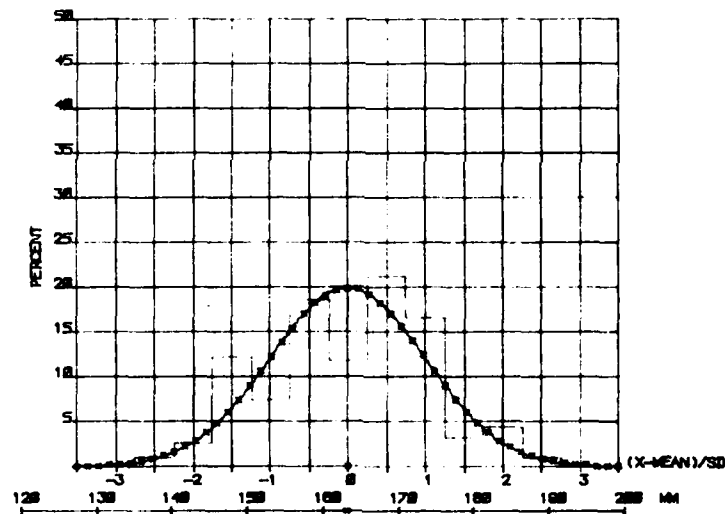


TABLE 8

Inner Hand Grip Circumference (mm)

Number of Subjects : 312
 Mean : 163.2
 Standard Deviation : 10.3
 Coefficient of Skewness: -0.02
 Coefficient of Kurtosis : -0.28
 Range of Data : 135-191



1st percentile	139
3rd percentile	144
5th percentile	146
10th percentile	150
15th percentile	153
20th percentile	155
25th percentile	156
30th percentile	158
40th percentile	161
50th percentile	163
60th percentile	166
70th percentile	169
75th percentile	170
80th percentile	172
85th percentile	174
90th percentile	176
95th percentile	180
97th percentile	182
99th percentile	187

TABLE 9

Head Circumference

Subject sits erect, looking straight ahead. Measure the maximum head circumference, the tape passing just over the brow ridges and over the occiput, using just sufficient tape tension to flatten the hair.



TABLE 9

Head Circumference (mm)

Number of Subjects : 312

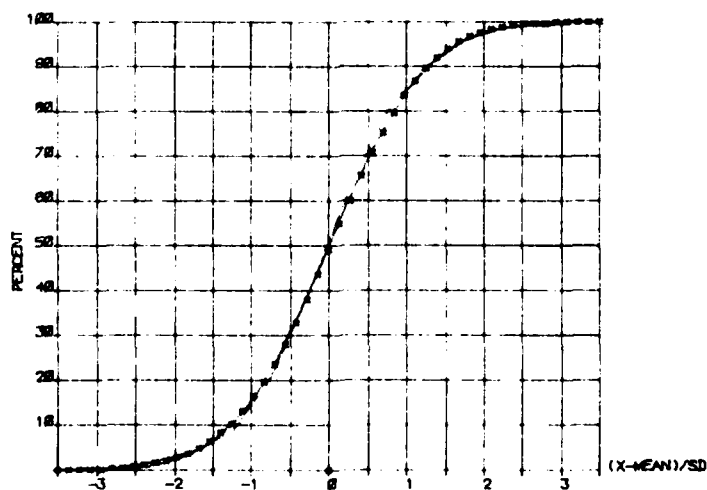
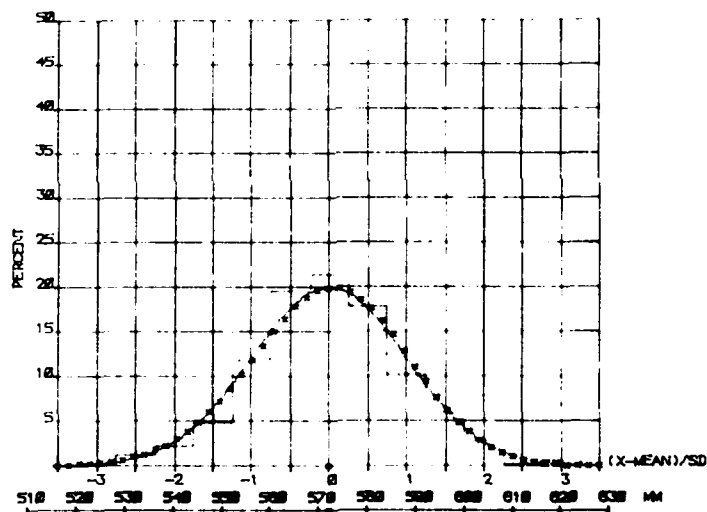
Mean : 572.3

Standard Deviation : 16.0

Coefficient of Skewness: -0.13

Coefficient of Kurtosis : 1.16

Range of Data : 506-624



1st percentile	534
3rd percentile	541
5th percentile	545
10th percentile	552
15th percentile	556
20th percentile	559
25th percentile	562
30th percentile	564
40th percentile	569
50th percentile	573
60th percentile	577
70th percentile	581
75th percentile	583
80th percentile	586
85th percentile	589
90th percentile	593
95th percentile	598
97th percentile	601
99th percentile	608

TABLE 10

Neck Circumference

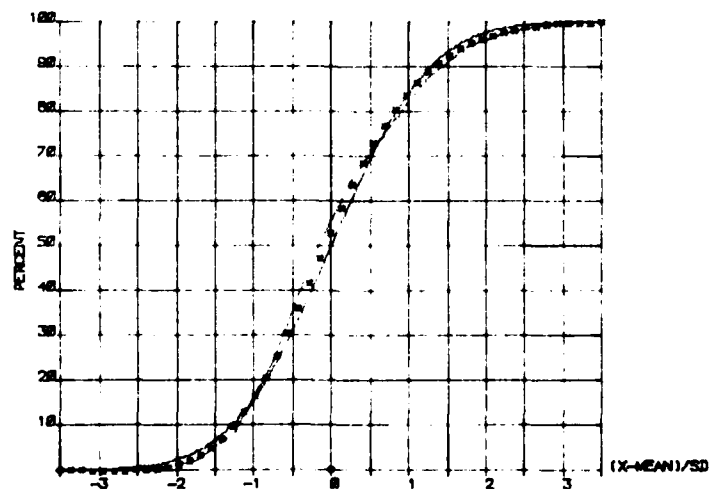
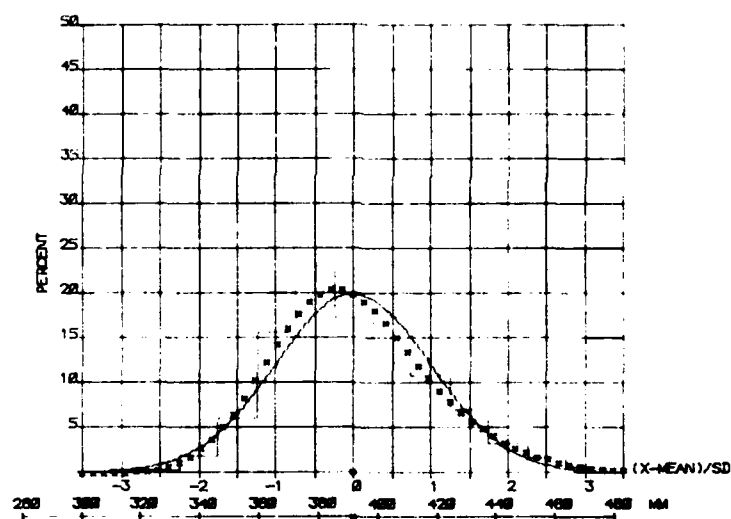
Subject sits erect, looking straight ahead. Measure the circumference of the neck ensuring that the tape is at right angles to the longitudinal axis of the neck and that the datum edge of the tape passes over the tip of the thyroid cartilage.



TABLE 10

Neck Circumference (mm)

Number of Subjects : 312
 Mean : 391.8
 Standard Deviation : 26.1
 Coefficient of Skewness: 0.46
 Coefficient of Kurtosis : 0.00
 Range of Data : 322-473



1st percentile	339
3rd percentile	347
5th percentile	352
10th percentile	359
15th percentile	365
20th percentile	369
25th percentile	373
30th percentile	377
40th percentile	383
50th percentile	390
60th percentile	396
70th percentile	404
75th percentile	408
80th percentile	413
85th percentile	419
90th percentile	427
95th percentile	439
97th percentile	446
99th percentile	460

TABLE 11

Chest Circumference

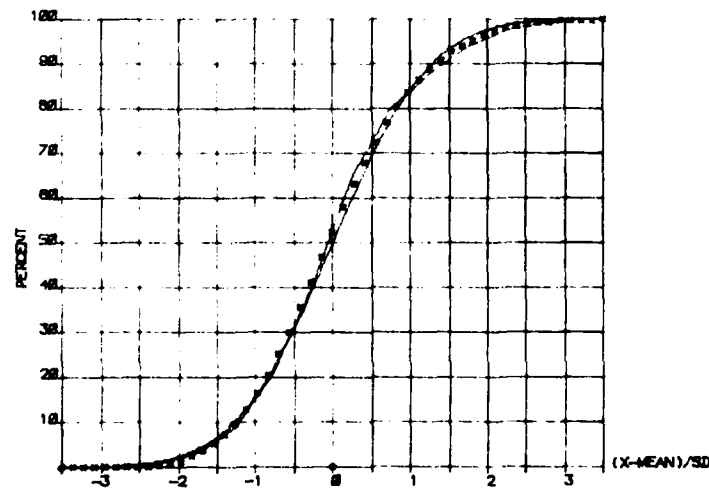
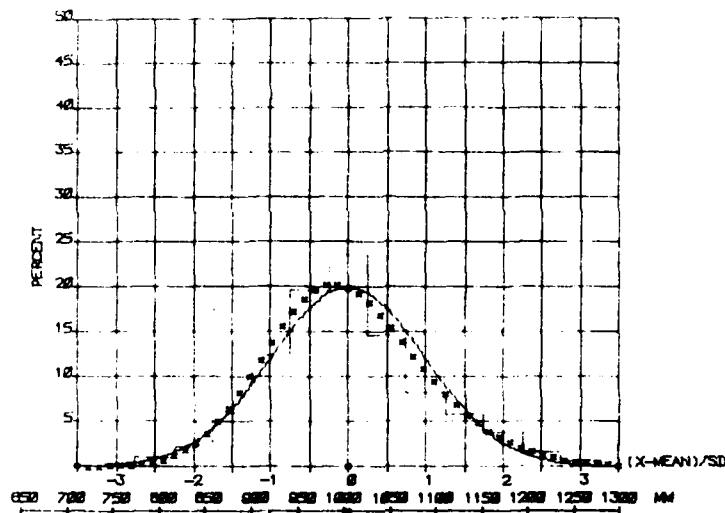
Subject stands erect, feet approximately 100 mm apart, with arms away from the sides. The tape is passed horizontally around the chest, aligning the datum edge with the nipples and the chest marks made on the subject's back. The arms are lowered, tape alignment checked and Chest Circumference measured at the end of a normal inspiration.



TABLE 11

Chest Circumference (mm)

Number of Subjects : 312
 Mean : 1004.2
 Standard Deviation : 83.8
 Coefficient of Skewness: 0.37
 Coefficient of Kurtosis : 0.22
 Range of Data : 798-1269



1st percentile	831
3rd percentile	858
5th percentile	874
10th percentile	900
15th percentile	918
20th percentile	932
25th percentile	945
30th percentile	957
40th percentile	978
50th percentile	999
60th percentile	1020
70th percentile	1044
75th percentile	1058
80th percentile	1073
85th percentile	1092
90th percentile	1116
95th percentile	1152
97th percentile	1176
99th percentile	1220

TABLE 12

Waist Circumference

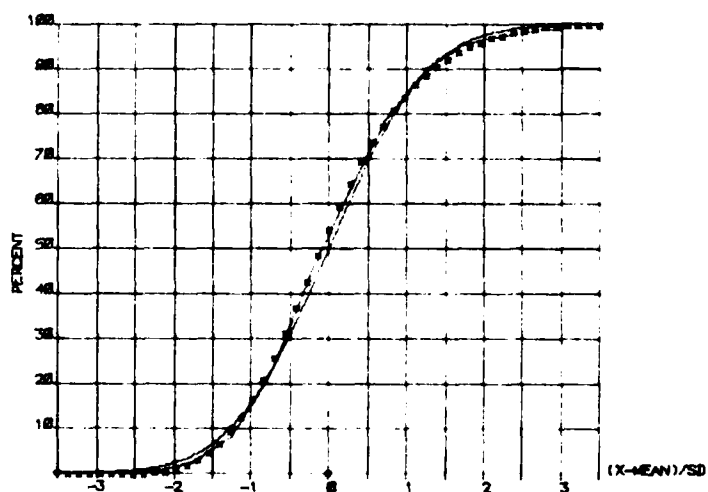
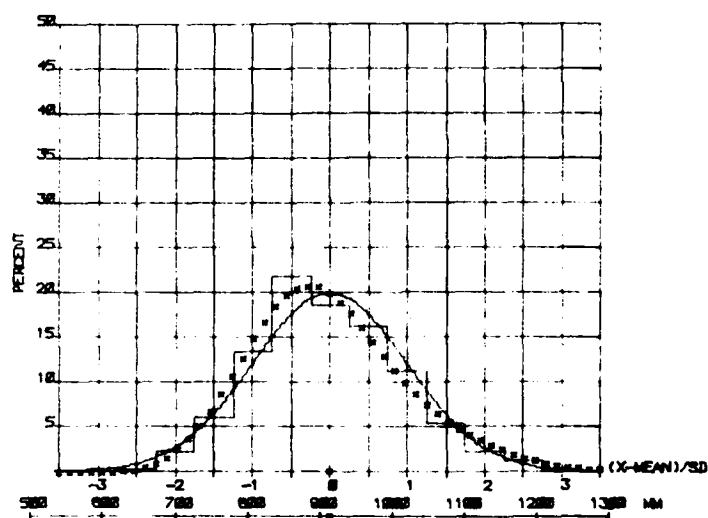
Subject stands erect, heels approximately 100 mm apart, with arms away from the sides. The tape is passed horizontally around the waist, aligning the datum edge with the umbilicus and the waist marks made on the subject's back. The arms are lowered, tape alignment checked, and the Waist Circumference measured.



TABLE 12

Waist Circumference (mm)

Number of Subjects	: 312
Mean	: 913.9
Standard Deviation	: 107.0
Coefficient of Skewness:	0.60
Coefficient of Kurtosis :	0.86
Range of Data	: 660-1360



1st percentile	708
3rd percentile	735
5th percentile	753
10th percentile	782
15th percentile	804
20th percentile	821
25th percentile	837
30th percentile	851
40th percentile	878
50th percentile	903
60th percentile	931
70th percentile	961
75th percentile	979
80th percentile	1000
85th percentile	1026
90th percentile	1060
95th percentile	1111
97th percentile	1144
99th percentile	1203

TABLE 13

Buttock Circumference

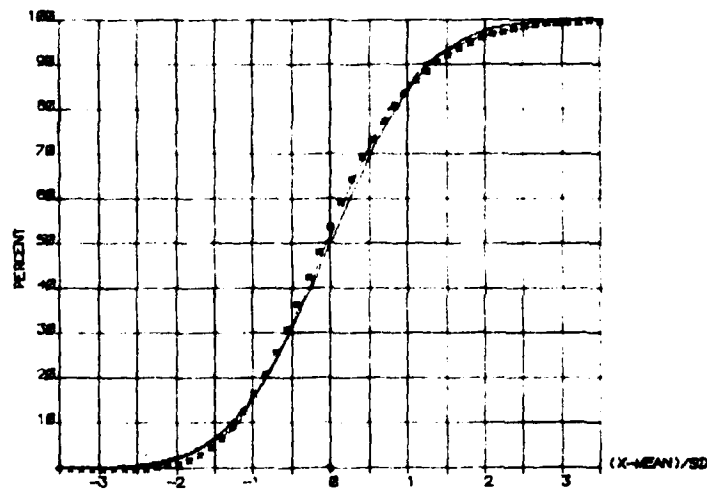
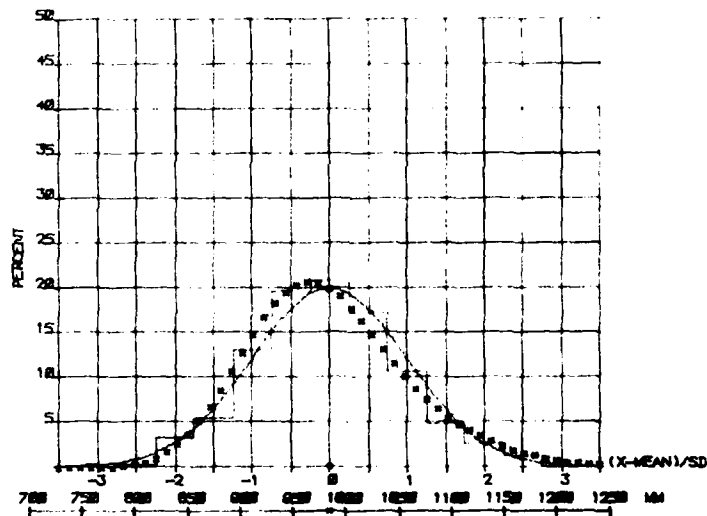
Subject stands erect, feet together. Measure Buttock Circumference with the tape passing horizontally around the maximum posterior protuberance of the buttocks.



TABLE 13

Buttock Circumference (mm)

Number of Subjects : 312
 Mean : 984.4
 Standard Deviation : 73.2
 Coefficient of Skewness: 0.58
 Coefficient of Kurtosis : 1.32
 Range of Data : 792-1290



1st percentile	842
3rd percentile	862
5th percentile	874
10th percentile	894
15th percentile	909
20th percentile	921
25th percentile	932
30th percentile	941
40th percentile	960
50th percentile	977
60th percentile	996
70th percentile	1017
75th percentile	1029
80th percentile	1044
85th percentile	1061
90th percentile	1084
95th percentile	1119
97th percentile	1141
99th percentile	1181

TABLE 14

Vertical Trunk Circumference

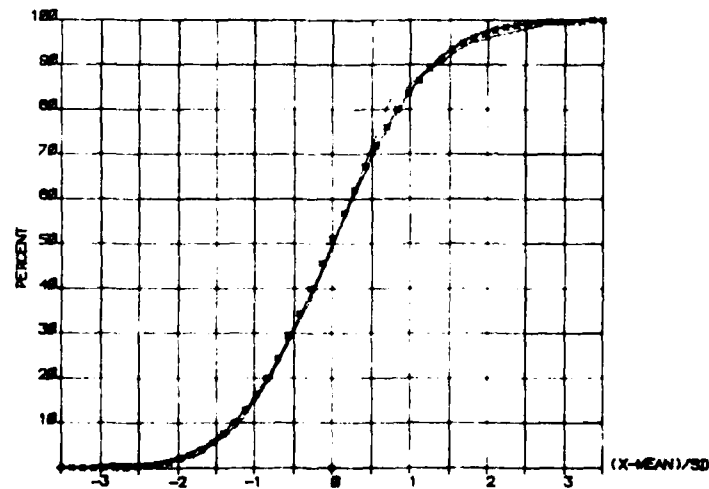
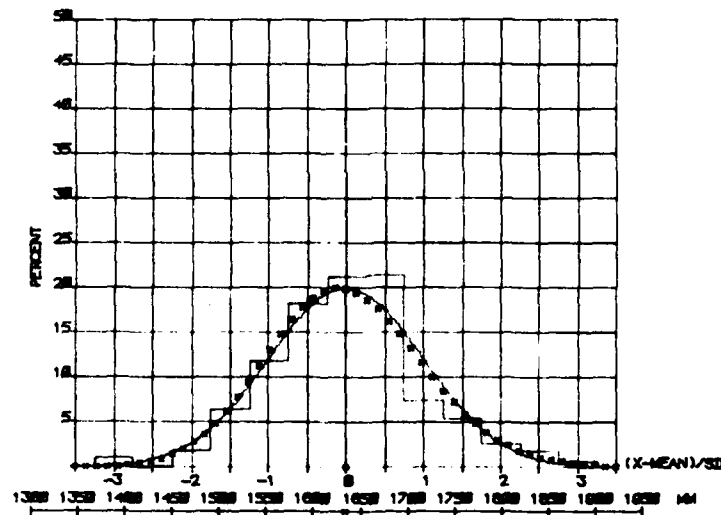
Subject stands erect, looking straight ahead, heels approximately 100 mm apart and the arms relaxed by the sides. Measure Vertical Trunk Circumference, passing the tape back over the left shoulder, the datum edge aligned with the 90 mm shoulder mark, down between the buttocks, through the crotch to the left of the genitals and up the front of the trunk spanning all body hollows. Adjust the tape tension so that firm pressure is applied to the crotch without indenting the shoulder.



TABLE 14

Vertical Trunk Circumference (mm)

Number of Subjects : 312
 Mean : 1634.2
 Standard Deviation : 82.0
 Coefficient of Skewness: 0.18
 Coefficient of Kurtosis : 0.51
 Range of Data : 1372-1882



1st percentile 1454
 3rd percentile 1486
 5th percentile 1503
 10th percentile 1531
 15th percentile 1549
 20th percentile 1564
 25th percentile 1578
 30th percentile 1589
 40th percentile 1611
 50th percentile 1632
 60th percentile 1653
 70th percentile 1675
 75th percentile 1688
 80th percentile 1702
 85th percentile 1719
 90th percentile 1741
 95th percentile 1773
 97th percentile 1795
 99th percentile 1836

TABLE 15

Buttock-Heel Length

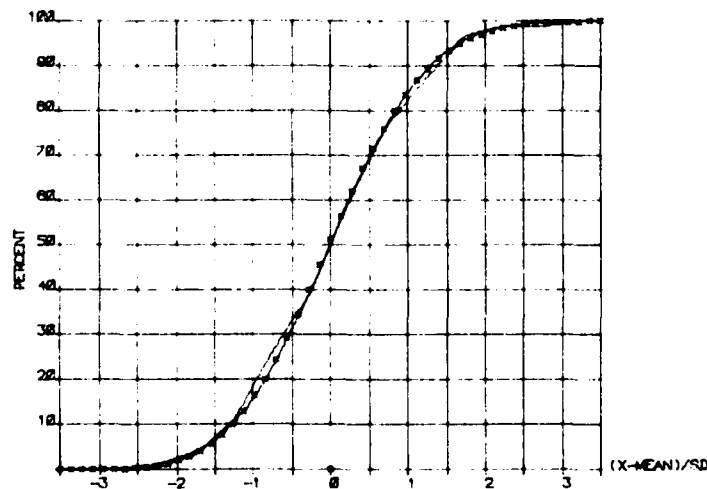
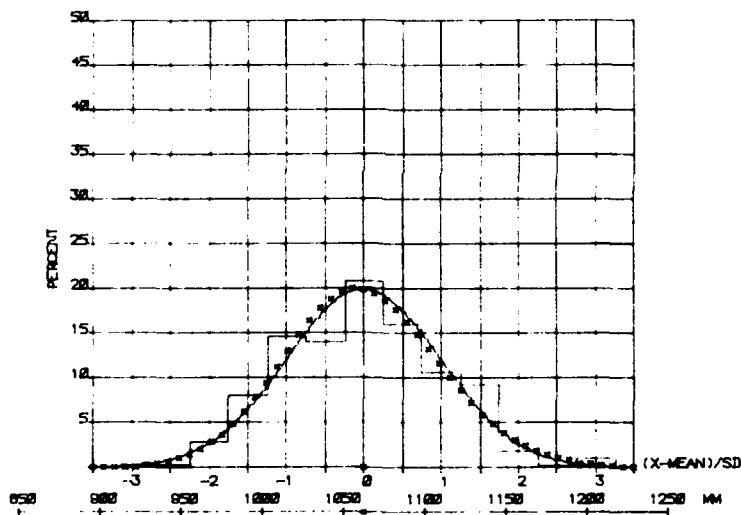
Subject sits on the measuring rig with both legs out straight and the knees locked. The subject is instructed to '... push your buttocks as far as possible into the back wall'. Before the subject relaxes, the foot block is brought up to the left heel and the distance of the datum edge from the rear wall of the measuring device is recorded.



TABLE 15

Buttock-Heel Length (mm)

Number of Subjects : 312
 Mean : 1062.8
 Standard Deviation : 47.7
 Coefficient of Skewness: 0.17
 Coefficient of Kurtosis : -0.42
 Range of Data : 952-1198



1st percentile	958
3rd percentile	976
5th percentile	987
10th percentile	1003
15th percentile	1014
20th percentile	1022
25th percentile	1030
30th percentile	1037
40th percentile	1050
50th percentile	1061
60th percentile	1074
70th percentile	1087
75th percentile	1094
80th percentile	1103
85th percentile	1112
90th percentile	1125
95th percentile	1144
97th percentile	1156
99th percentile	1179

TABLE 16

Mass

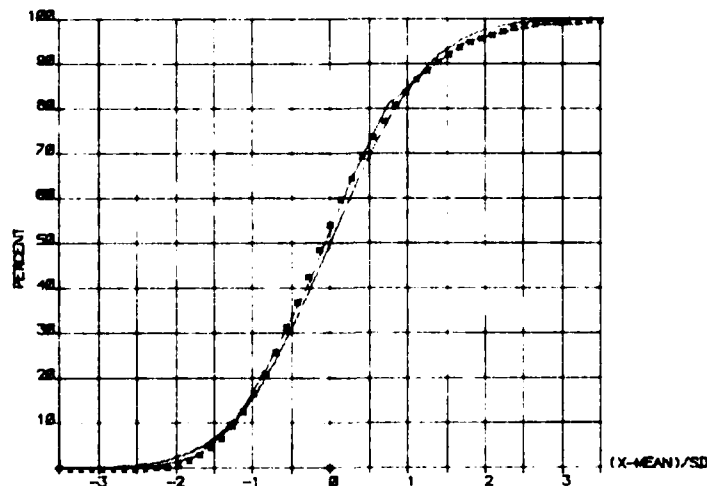
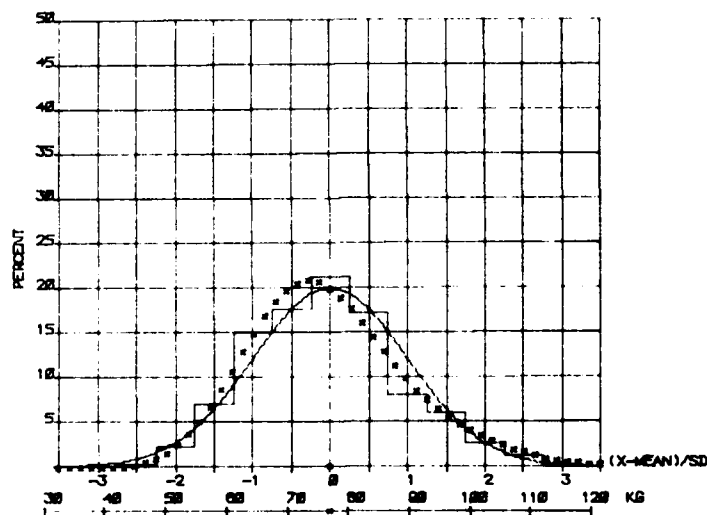
The mass of the subject is recorded standing on a spring scale (subject wearing briefs only).



TABLE 16

Mass (kg)

Number of Subjects	: 312
Mean	: 77.0
Standard Deviation	: 12.7
Coefficient of Skewness:	0.61
Coefficient of Kurtosis :	0.98
Range of Data	: 46.0-124.5



1st percentile	52.6
3rd percentile	55.9
5th percentile	57.9
10th percentile	61.4
15th percentile	63.9
20th percentile	66.0
25th percentile	67.9
30th percentile	69.5
40th percentile	72.7
50th percentile	75.8
60th percentile	79.0
70th percentile	82.6
75th percentile	84.8
80th percentile	87.3
85th percentile	90.3
90th percentile	94.4
95th percentile	100.6
97th percentile	104.5
99th percentile	111.5

TABLE 17

Sitting Height

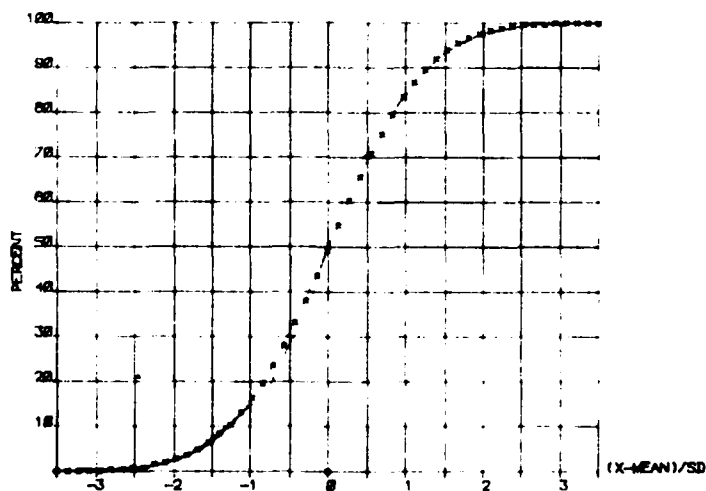
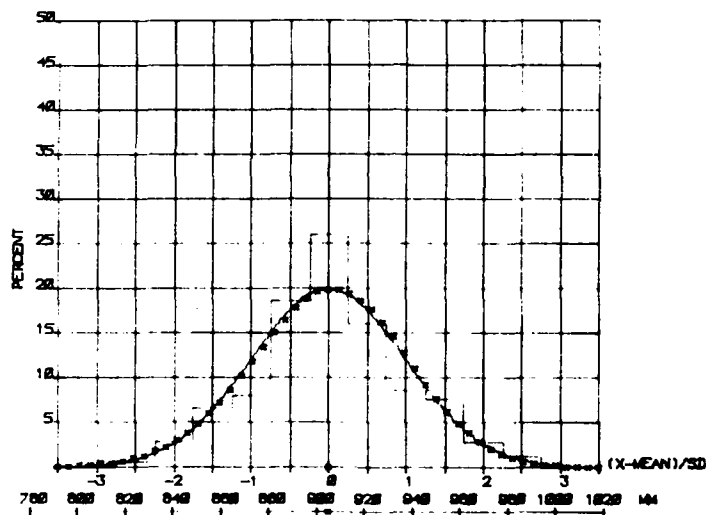
The subject holds the sitting posture. The datum edge is brought down in the midsagittal plane until light contact is made with the vertex. Record the height of the datum edge from the floor. Sitting Height equals datum height less Stool Height.



TABLE 17

Sitting Height (mm)

Number of Subjects : 312
 Mean : 905.0
 Standard Deviation : 32.3
 Coefficient of Skewness: -0.12
 Coefficient of Kurtosis : 0.30
 Range of Data : 796-987



1st percentile 827
 3rd percentile 842
 5th percentile 851
 10th percentile 863
 15th percentile 871
 20th percentile 878
 25th percentile 884
 30th percentile 889
 40th percentile 897
 50th percentile 906
 60th percentile 914
 70th percentile 922
 75th percentile 927
 80th percentile 932
 85th percentile 938
 90th percentile 946
 95th percentile 957
 97th percentile 964
 99th percentile 977

TABLE 18

Eye Height (Sitting)

The subject holds the sitting posture. The datum line is brought up until the reflections of this line and the centre of the subject's left pupil, in the mirror opposite, are coincident. Record the height of the datum line from the floor. Eye Height equals datum height less Stool Height.

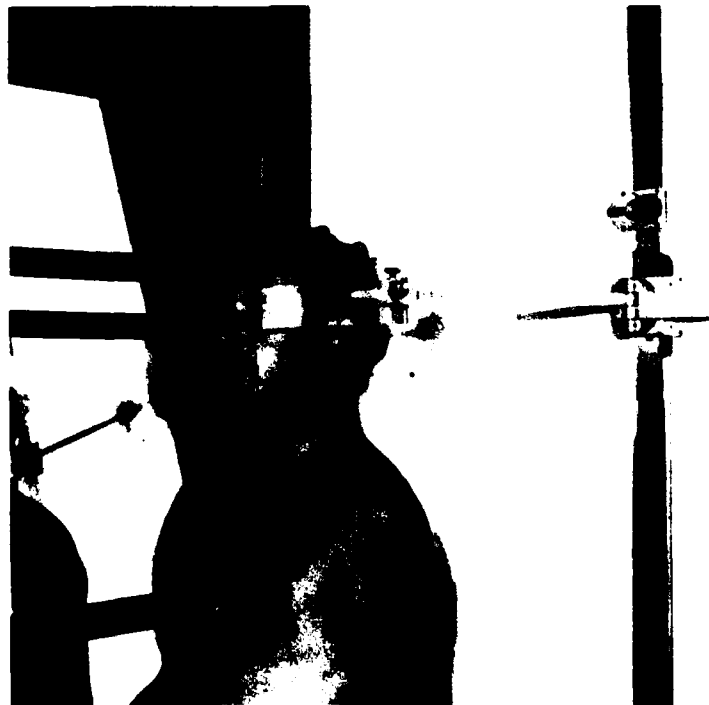
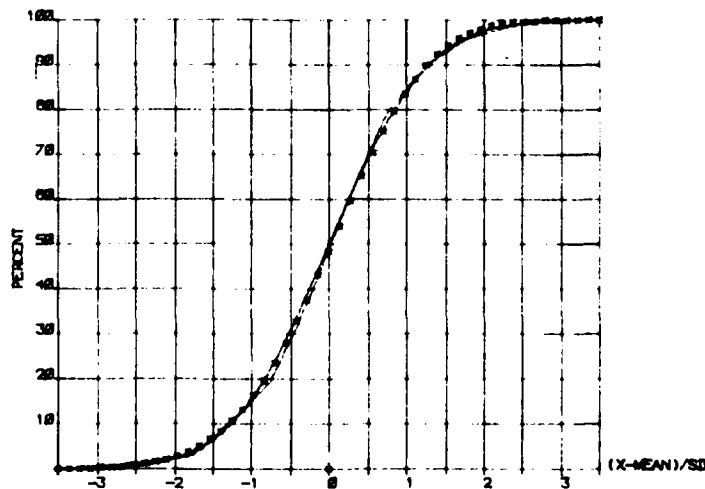
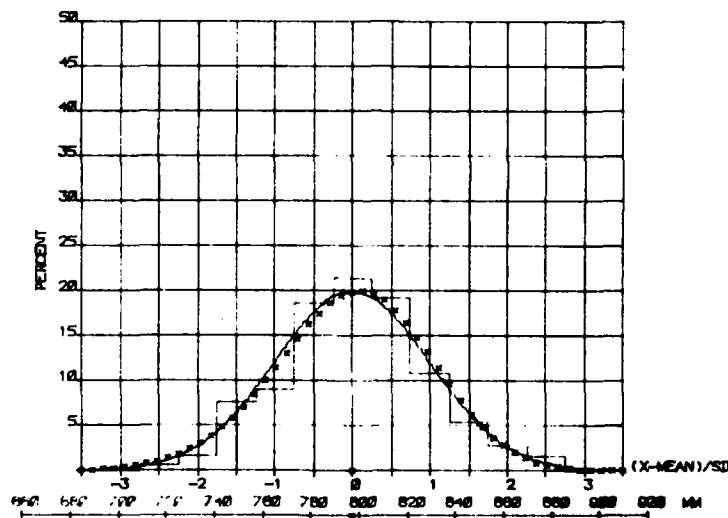


TABLE 18

Eye Height (Sitting) (mm)

Number of Subjects : 312
 Mean : 797.1
 Standard Deviation : 32.1
 Coefficient of Skewness: -0.20
 Coefficient of Kurtosis : 0.51
 Range of Data : 687-882



1st percentile	718
3rd percentile	734
5th percentile	742
10th percentile	755
15th percentile	764
20th percentile	770
25th percentile	776
30th percentile	781
40th percentile	790
50th percentile	798
60th percentile	806
70th percentile	815
75th percentile	819
80th percentile	824
85th percentile	830
90th percentile	838
95th percentile	848
97th percentile	855
99th percentile	867

TABLE 19

Shoulder Height (Sitting)

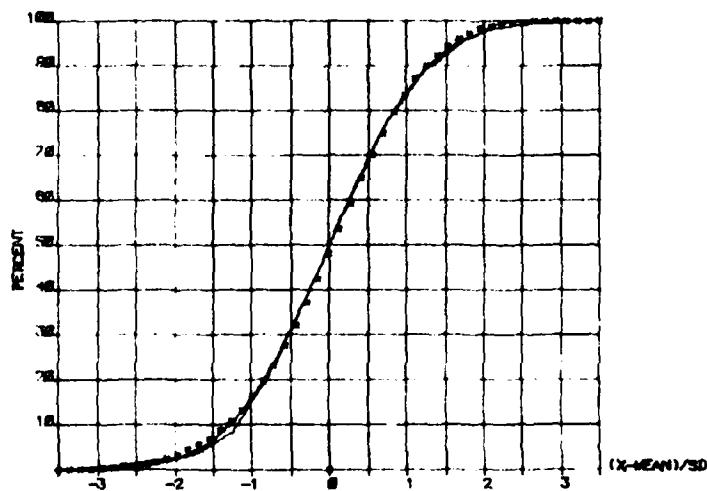
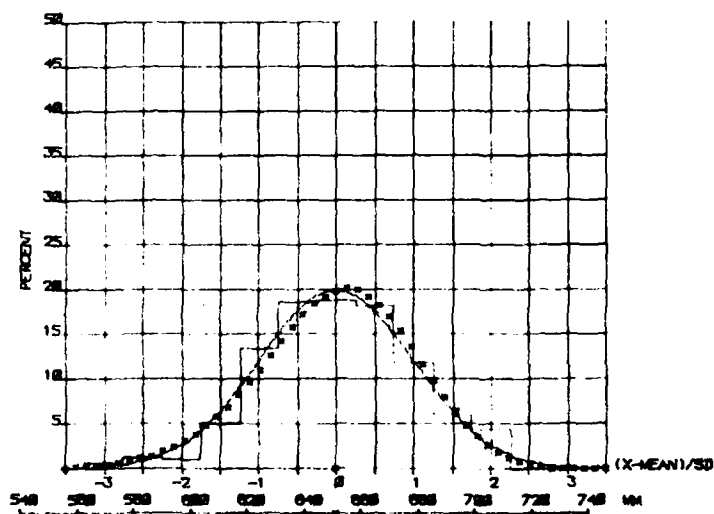
The subject holds the sitting posture. The datum edge is brought down until light contact is made with the 90 mm mark on the left shoulder. Record the height of the datum edge from the floor. Shoulder Height equals datum height less Stool Height.



TABLE 19

Shoulder Height (Sitting) (mm)

Number of Subjects : 312
 Mean : 651.1
 Standard Deviation : 27.2
 Coefficient of Skewness: -0.30
 Coefficient of Kurtosis : 0.52
 Range of Data : 548-711



1st percentile	582
3rd percentile	596
5th percentile	604
10th percentile	615
15th percentile	623
20th percentile	629
25th percentile	634
30th percentile	638
40th percentile	646
50th percentile	652
60th percentile	659
70th percentile	666
75th percentile	670
80th percentile	674
85th percentile	679
90th percentile	685
95th percentile	694
97th percentile	699
99th percentile	709

TABLE 20

Acromial Height (Sitting)

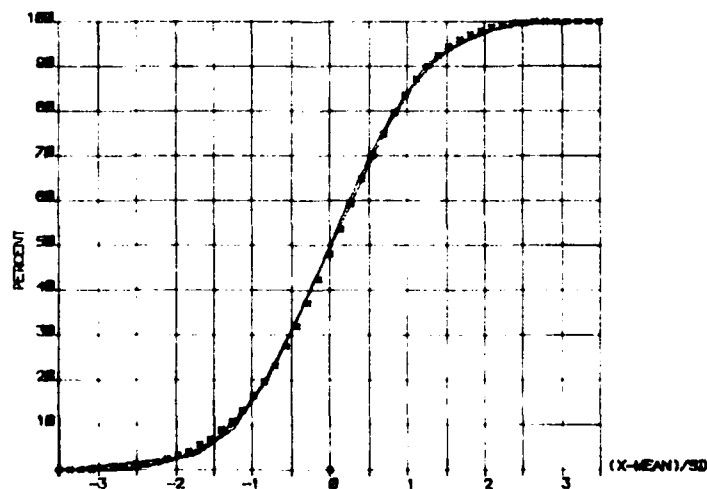
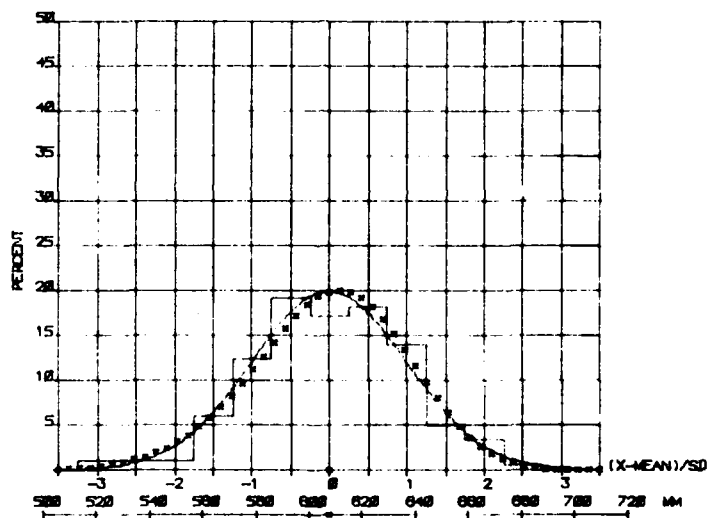
The subject holds the sitting posture. The datum edge is brought down until light contact is made with the left acromial mark. Record the height of the datum edge from the floor. Acromial Height equals datum height less Stool Height.



TABLE 20

Acromial Height (Sitting) (mm)

Number of Subjects : 312
 Mean : 607.6
 Standard Deviation : 29.1
 Coefficient of Skewness: -0.29
 Coefficient of Kurtosis : 0.40
 Range of Data : 512-676



1st percentile	534
3rd percentile	549
5th percentile	557
10th percentile	569
15th percentile	577
20th percentile	584
25th percentile	589
30th percentile	593
40th percentile	602
50th percentile	609
60th percentile	616
70th percentile	624
75th percentile	628
80th percentile	633
85th percentile	638
90th percentile	644
95th percentile	653
97th percentile	659
99th percentile	669

TABLE 21

Elbow Rest Height

The subject holds the sitting posture except that the forearms are raised and extended forwards horizontally. The hands and fingers are extended in the vertical plane containing the forearm. The datum edge is brought up to make contact with the lower edge of the left olecranon. Record the height of the datum edge from the floor. Elbow Rest Height equals datum height less Stool Height.

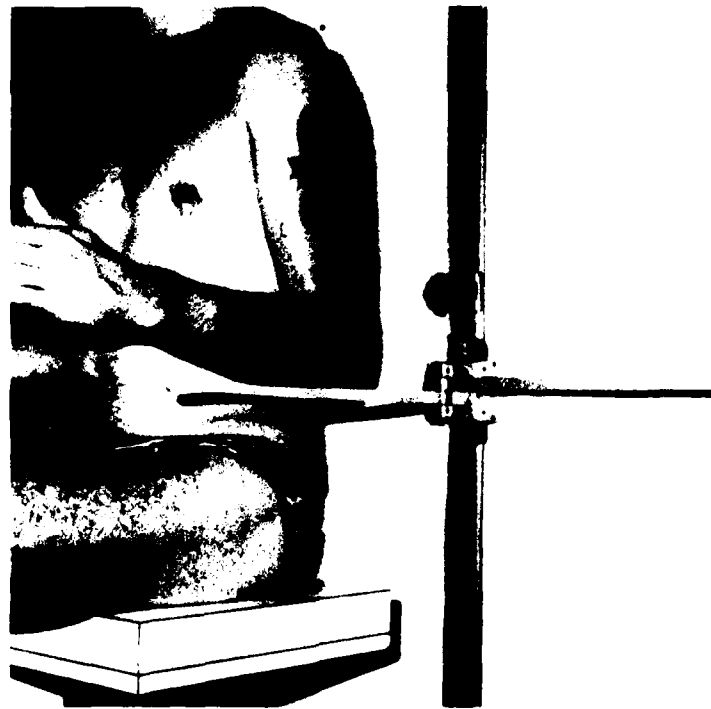
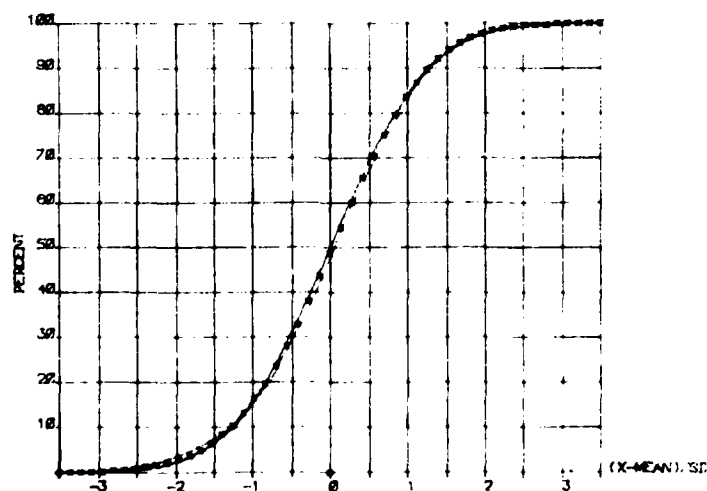
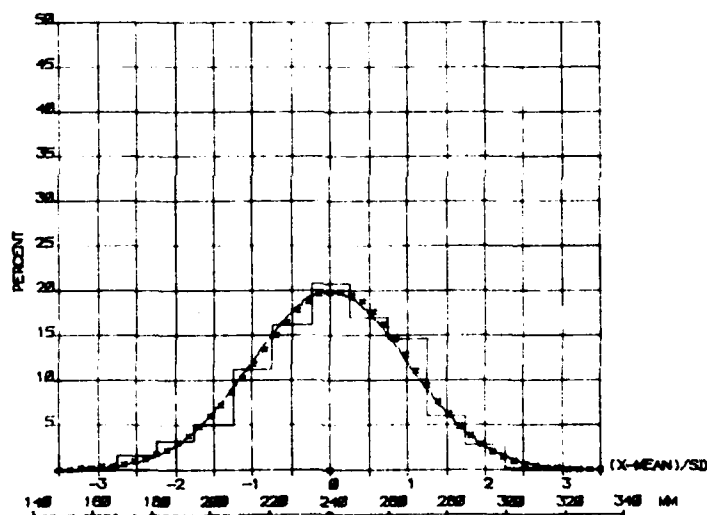


TABLE 21

Elbow Rest Height (mm)

Number of Subjects : 312
 Mean : 240.3
 Standard Deviation : 26.2
 Coefficient of Skewness: -0.14
 Coefficient of Kurtosis : -0.04
 Range of Data : 165-313



1st percentile	177
3rd percentile	189
5th percentile	196
10th percentile	206
15th percentile	213
20th percentile	218
25th percentile	223
30th percentile	227
40th percentile	234
50th percentile	241
60th percentile	247
70th percentile	254
75th percentile	258
80th percentile	263
85th percentile	267
90th percentile	274
95th percentile	282
97th percentile	288
99th percentile	299

TABLE 22

Popliteal Height

The subject holds the sitting posture. With the sliding calipers measure the vertical distance from the floor to the underside of the tendon of the left biceps femoris muscle where it joins the calf.

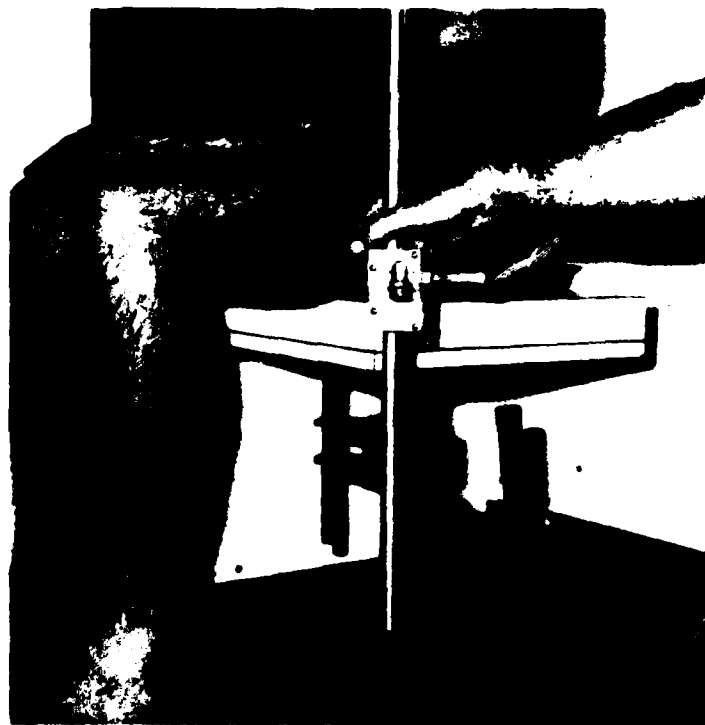
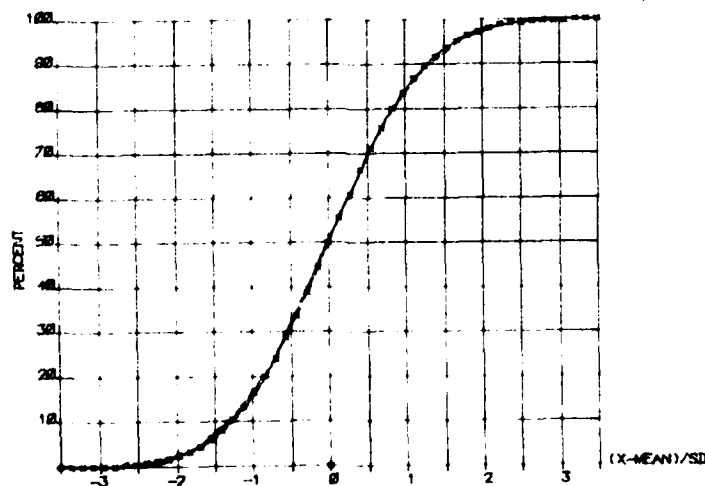
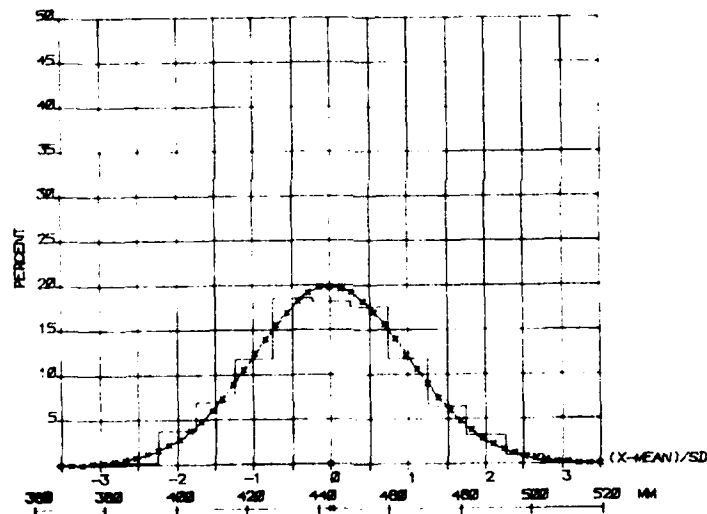


TABLE 22

Popliteal Height (mm)

Number of Subjects : 312
 Mean : 443.8
 Standard Deviation : 21.7
 Coefficient of Skewness: 0.01
 Coefficient of Kurtosis : -0.46
 Range of Data : 389-496



1st percentile	393
3rd percentile	403
5th percentile	408
10th percentile	416
15th percentile	421
20th percentile	426
25th percentile	429
30th percentile	432
40th percentile	438
50th percentile	444
60th percentile	449
70th percentile	455
75th percentile	458
80th percentile	462
85th percentile	466
90th percentile	472
95th percentile	480
97th percentile	485
99th percentile	495

TABLE 23

Bideltoid Breadth

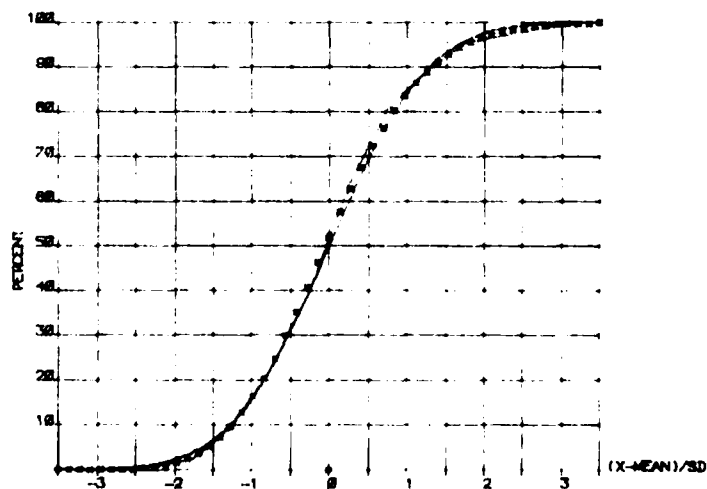
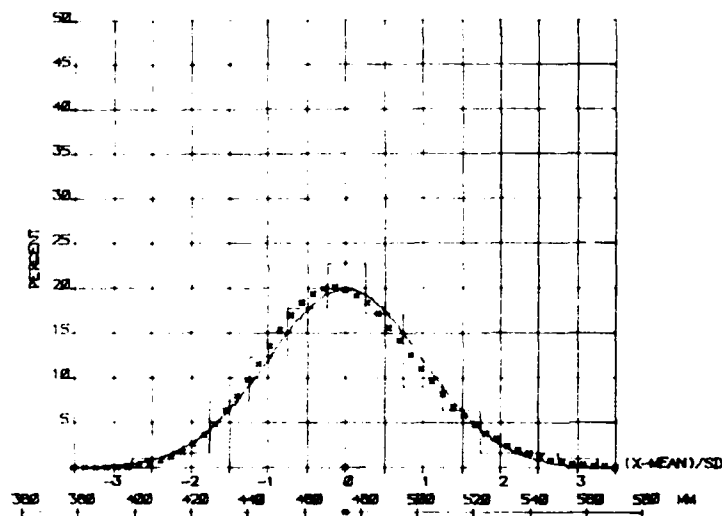
The subject moves across to his right-hand side until the right deltoid muscle is brought into light contact with the perspex wall panel. The circle of skin in contact with the perspex has a diameter of approximately 30 mm (this is monitored in the mirror). The subject regains the sitting posture and the datum edge is moved horizontally until light contact is made with the most distal portion of the left deltoid prominence. Record the distance of the datum edge from the end wall.



TABLE 23

Bideltoid Breadth (mm)

Number of Subjects	: 312
Mean	: 474.5
Standard Deviation	: 27.4
Coefficient of Skewness:	0.31
Coefficient of Kurtosis :	0.27
Range of Data	: 403-560



1st percentile	417
3rd percentile	426
5th percentile	432
10th percentile	440
15th percentile	446
20th percentile	451
25th percentile	455
30th percentile	459
40th percentile	466
50th percentile	473
60th percentile	480
70th percentile	488
75th percentile	492
80th percentile	497
85th percentile	503
90th percentile	511
95th percentile	522
97th percentile	530
99th percentile	544

TABLE 24

Hip Breadth

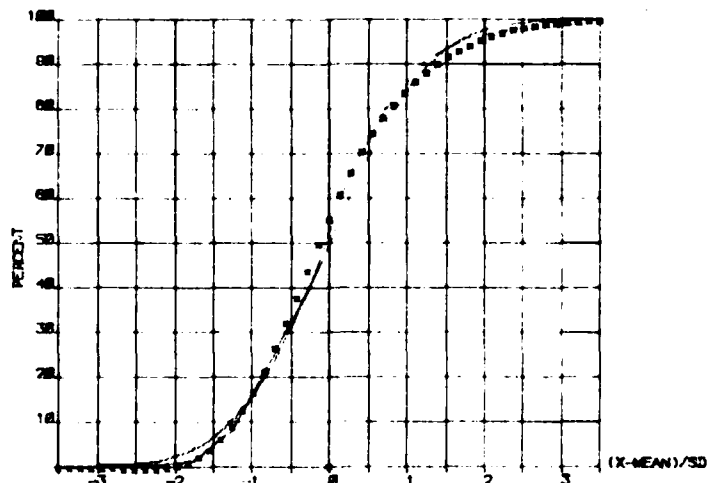
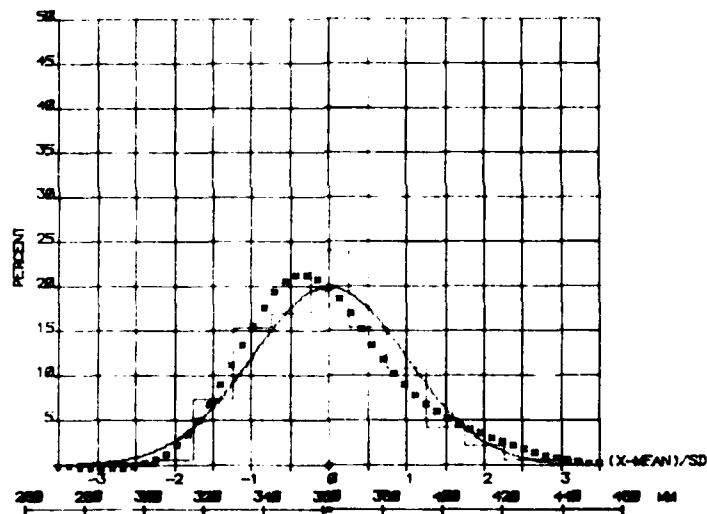
Subject moves across to his right-hand side so that the fleshy part of his right hip makes light contact with the perspex wall panel (monitored in the mirror). The subject's knees are brought together; feet are flat on the floor. The datum edge is moved horizontally until light contact is made with the widest region of the left hip. Record the distance of the datum edge from the end wall.



TABLE 24

Hip Breadth (mm)

Number of Subjects	: 312
Mean	: 361.9
Standard Deviation	: 25.9
Coefficient of Skewness:	0.82
Coefficient of Kurtosis :	2.13
Range of Data	: 282-478



1st percentile	315
3rd percentile	320
5th percentile	324
10th percentile	330
15th percentile	335
20th percentile	339
25th percentile	343
30th percentile	346
40th percentile	352
50th percentile	358
60th percentile	365
70th percentile	372
75th percentile	377
80th percentile	382
85th percentile	389
90th percentile	398
95th percentile	412
97th percentile	420
99th percentile	434

TABLE 25

Functional Reach

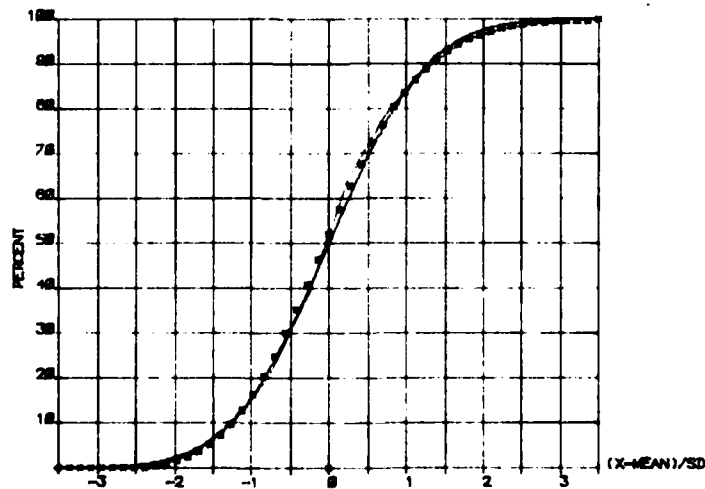
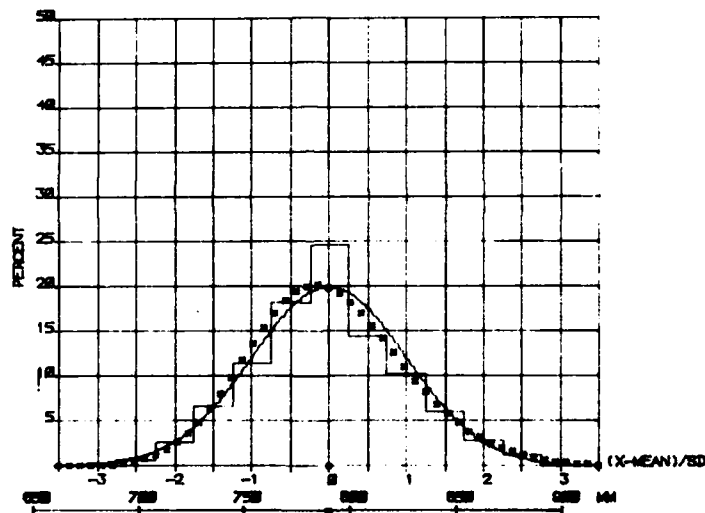
The subject sits erect looking straight ahead at the reflection of his pupils in the mirror directly in front of him. Both shoulder blades are symmetrically and lightly touching the perspex panel in the end wall of the measuring rig (monitored in the mirror). The arms are extended forward horizontally and the hand is pronated with the tip of the index finger touching the extended thumb (which is held in the plane of the extended arm). The datum edge is moved horizontally until contact is made with the tip of the left thumb. Record the distance of the datum edge from the end wall.



TABLE 25

Functional Reach (mm)

Number of Subjects : 312
 Mean : 789.8
 Standard Deviation : 36.4
 Coefficient of Skewness: 0.32
 Coefficient of Kurtosis : 0.28
 Range of Data : 691-916



1st percentile	713
3rd percentile	726
5th percentile	733
10th percentile	744
15th percentile	752
20th percentile	759
25th percentile	764
30th percentile	769
40th percentile	779
50th percentile	788
60th percentile	797
70th percentile	807
75th percentile	813
80th percentile	820
85th percentile	828
90th percentile	838
95th percentile	853
97th percentile	863
99th percentile	883

TABLE 26

Buttock-Knee Length

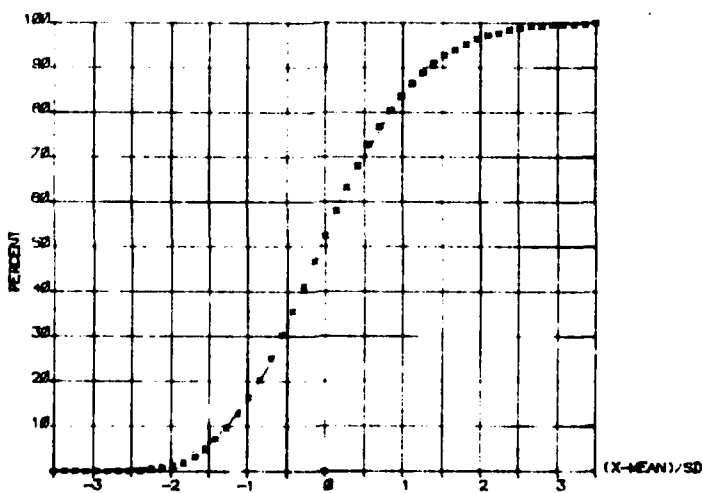
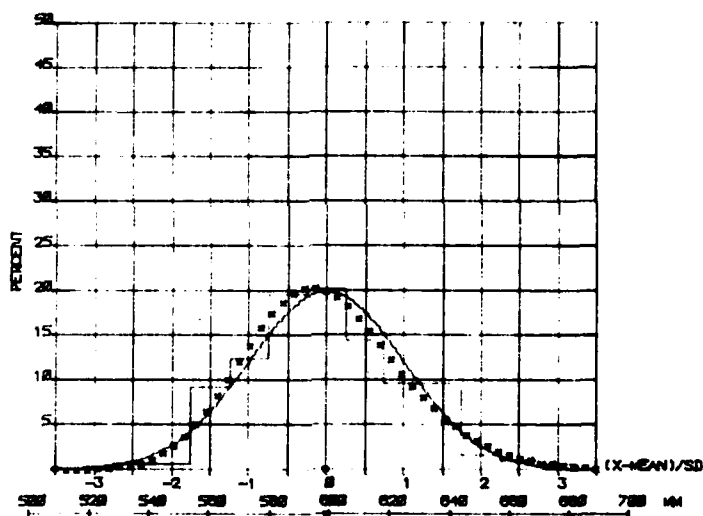
The subject sits erect, feet flat on the floor and thighs parallel to the rear wall of the measuring rig. The subject is instructed to ' . . . push your buttocks back until you have equal pressure on both buttocks against the perspex wall'. Both shoulder blades are symmetrically and lightly touching the perspex panel in the end wall of the measuring rig. The datum edge is moved horizontally until contact is made with the most forward prominence of the left patella. Record the distance of the datum edge from the end wall.



TABLE 26

Buttock-Knee Length (mm)

Number of Subjects	: 312
Mean	: 599.0
Standard Deviation	: 25.7
Coefficient of Skewness:	0.39
Coefficient of Kurtosis:	0.19
Range of Data	: 534-698



1st percentile	546
3rd percentile	554
5th percentile	559
10th percentile	567
15th percentile	572
20th percentile	577
25th percentile	581
30th percentile	584
40th percentile	591
50th percentile	597
60th percentile	604
70th percentile	611
75th percentile	615
80th percentile	620
85th percentile	626
90th percentile	633
95th percentile	645
97th percentile	652
99th percentile	666

TABLE 27

Thigh Clearance Height

The subject sits erect, feet flat on the floor, arms hanging vertically and lightly touching the sides. The datum edge is brought down to make light contact with the highest point on the left thigh. Record the height of the datum edge from the floor. Thigh Clearance Height equals datum height less Stool Height.

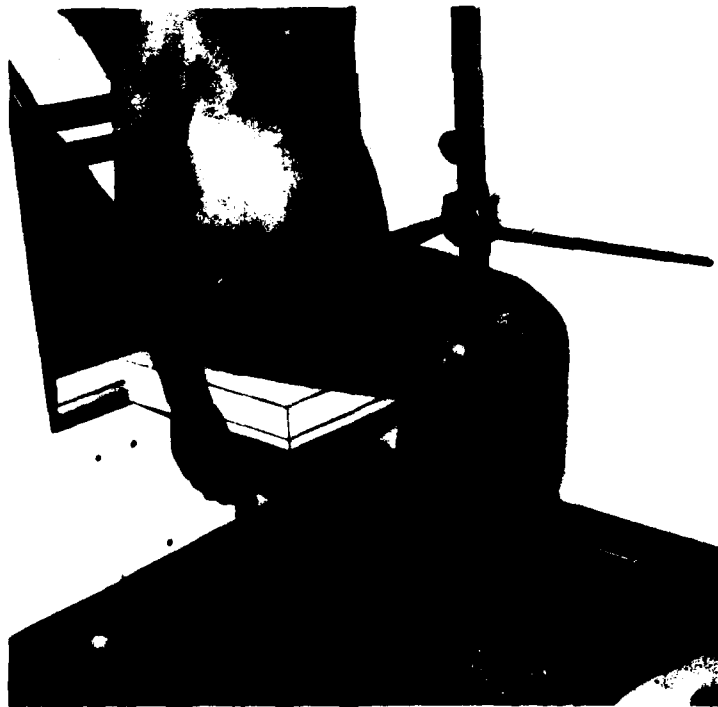
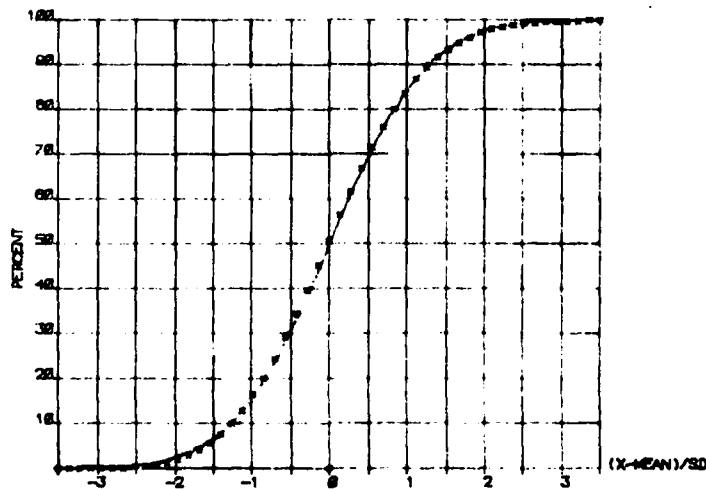
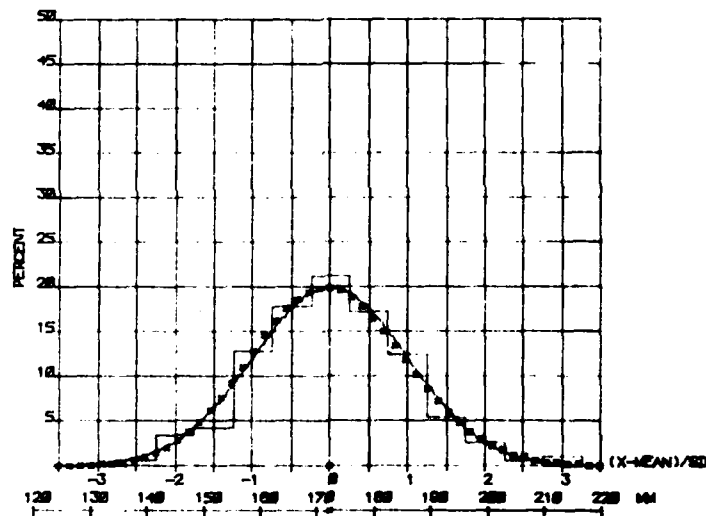


TABLE 27

Thigh Clearance Height (mm)

Number of Subjects : 312
 Mean : 172.2
 Standard Deviation : 13.6
 Coefficient of Skewness: 0.12
 Coefficient of Kurtosis : 0.39
 Range of Data : 126-216



1st percentile	142
3rd percentile	147
5th percentile	150
10th percentile	155
15th percentile	158
20th percentile	161
25th percentile	163
30th percentile	165
40th percentile	168
50th percentile	172
60th percentile	175
70th percentile	179
75th percentile	181
80th percentile	184
85th percentile	186
90th percentile	190
95th percentile	195
97th percentile	199
99th percentile	205

TABLE 28

Stool Height

The subject stands and moves away from the stool. The datum edge is brought down to make contact with the upper surface of the stool seat. Record the height of the datum edge from the floor.

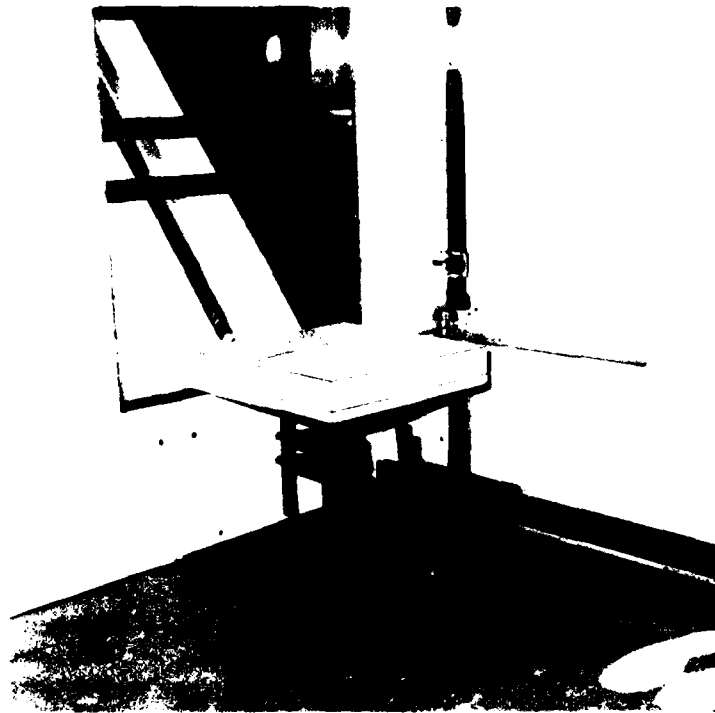
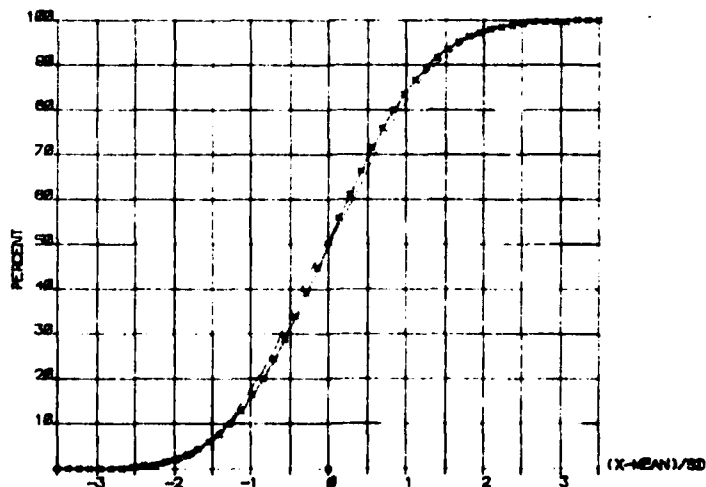
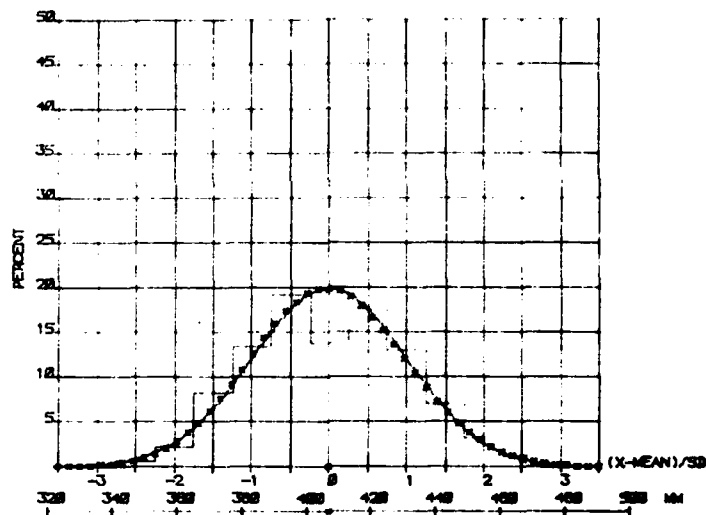


TABLE 28

Stool Height (mm)

Number of Subjects : 312
 Mean : 407.1
 Standard Deviation : 23.9
 Coefficient of Skewness: 0.08
 Coefficient of Kurtosis : -0.55
 Range of Data : 350-472



1st percentile	353
3rd percentile	363
5th percentile	368
10th percentile	377
15th percentile	382
20th percentile	387
25th percentile	391
30th percentile	394
40th percentile	401
50th percentile	407
60th percentile	413
70th percentile	419
75th percentile	423
80th percentile	427
85th percentile	432
90th percentile	438
95th percentile	447
97th percentile	453
99th percentile	464

TABLE 29

Stature

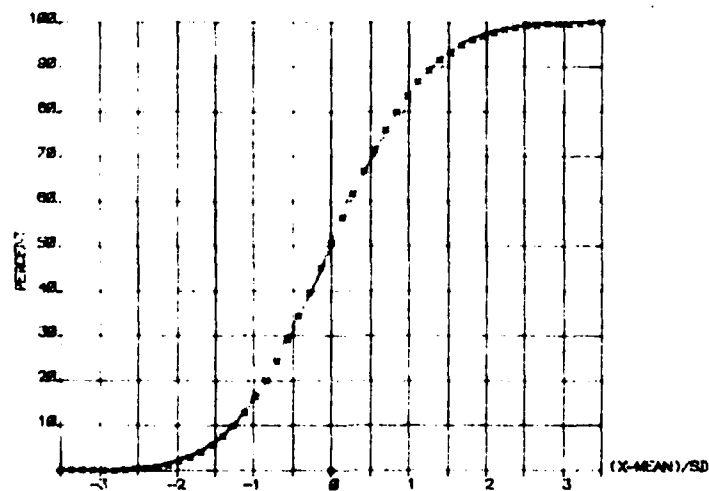
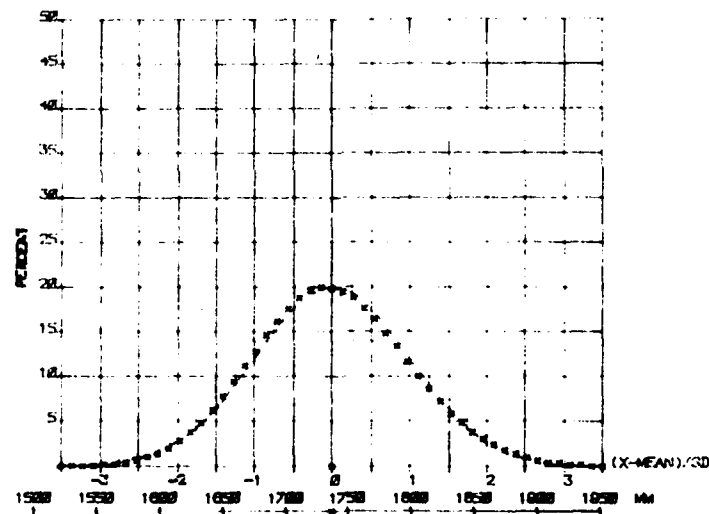
The subject stands erect, looking straight ahead, heels together and back free of the wall. The datum edge is brought down in the midsagittal plane until light contact is made with the vertex. Record the height of the datum edge from the floor.



TABLE 29

Stature (mm)

Number of Subjects : 312
 Mean : 1736.8
 Standard Deviation : 61.3
 Coefficient of Skewness: 0.15
 Coefficient of Kurtosis : -0.27
 Range of Data : 1590-1912



1st percentile	1601
3rd percentile	1625
5th percentile	1638
10th percentile	1659
15th percentile	1673
20th percentile	1685
25th percentile	1695
30th percentile	1704
40th percentile	1720
50th percentile	1735
60th percentile	1751
70th percentile	1768
75th percentile	1777
80th percentile	1788
85th percentile	1800
90th percentile	1816
95th percentile	1840
97th percentile	1856
99th percentile	1886

TABLE 30

Crotch Height

The subject stands erect looking straight ahead with heels approximately 100 mm apart. The datum edge is pushed up into the floor of the perineum, taking care not to impinge on the buttocks or the genitals. Record the height of the datum edge from the floor.

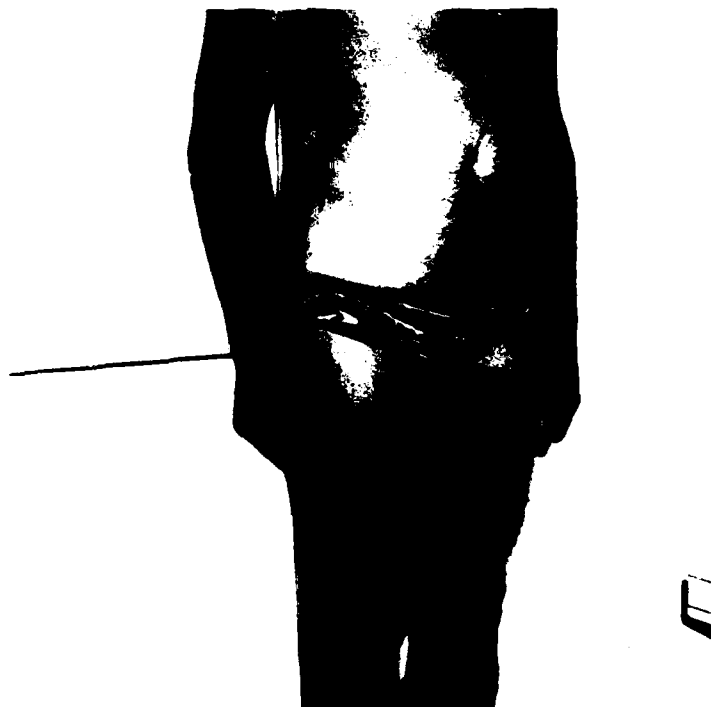
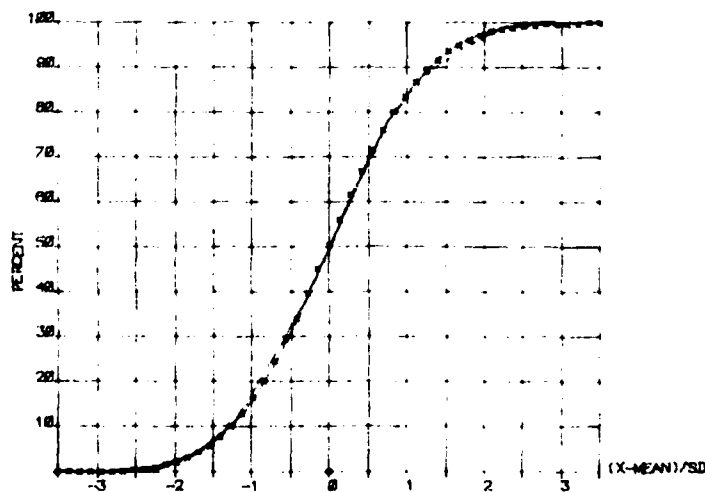
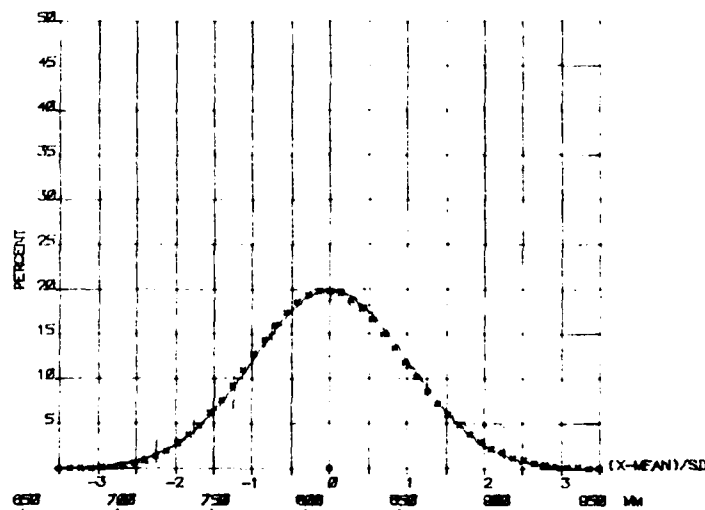


TABLE 30

Crotch Height (mm)

Number of Subjects : 312
 Mean : 812.6
 Standard Deviation : 41.0
 Coefficient of Skewness: 0.10
 Coefficient of Kurtosis : -0.32
 Range of Data : 718-925



1st percentile	720
3rd percentile	737
5th percentile	746
10th percentile	760
15th percentile	770
20th percentile	778
25th percentile	785
30th percentile	791
40th percentile	802
50th percentile	812
60th percentile	822
70th percentile	834
75th percentile	840
80th percentile	847
85th percentile	855
90th percentile	866
95th percentile	881
97th percentile	892
99th percentile	911

TABLE 31

Chest Depth

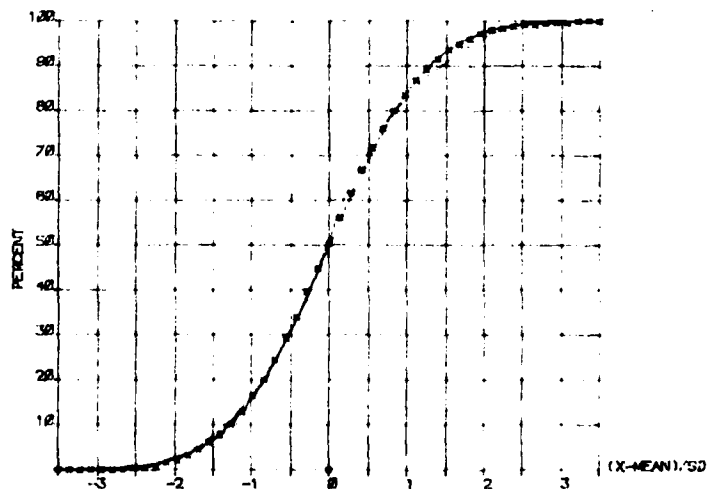
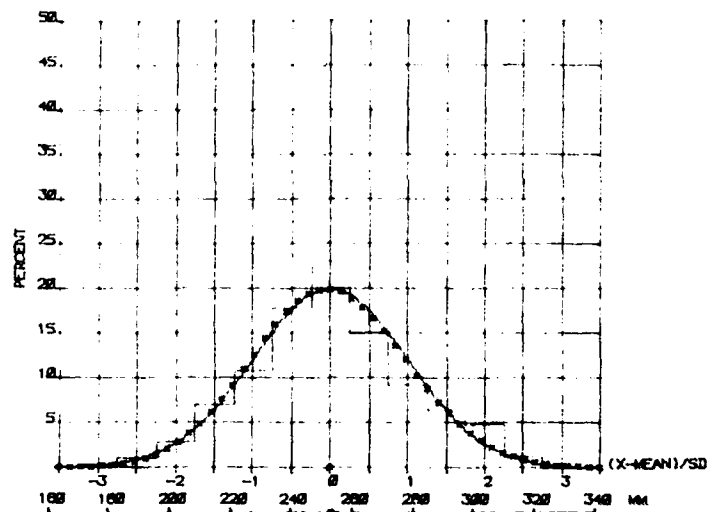
The subject stands erect with arms relaxed by the sides. With the bar of the sliding calipers held horizontally and parallel to the midsagittal plane at the level of the left nipple, measure Chest Depth at the end of a normal inspiration.



TABLE 31

Chest Depth (mm)

Number of Subjects : 312
 Mean : 253.0
 Standard Deviation : 25.5
 Coefficient of Skewness: 0.09
 Coefficient of Kurtosis : -0.20
 Range of Data : 180-315



1st percentile 195
 3rd percentile 206
 5th percentile 212
 10th percentile 221
 15th percentile 227
 20th percentile 231
 25th percentile 236
 30th percentile 239
 40th percentile 246
 50th percentile 253
 60th percentile 259
 70th percentile 266
 75th percentile 270
 80th percentile 274
 85th percentile 279
 90th percentile 286
 95th percentile 296
 97th percentile 302
 99th percentile 314

TABLE 32

Head Breadth

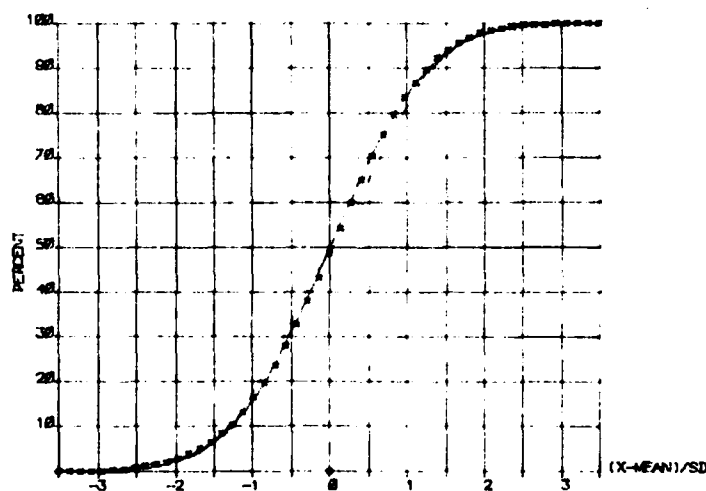
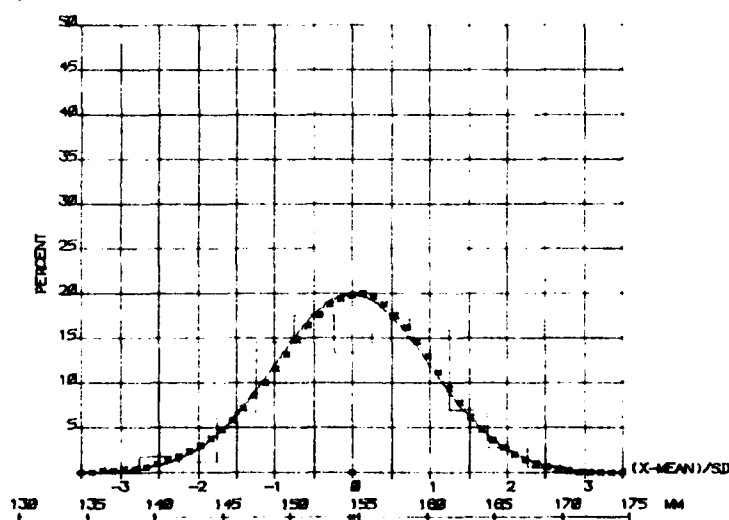
The subject sits, looking straight ahead. With the sliding calipers held in a horizontal plane and applying sufficient pressure with the jaws of the calipers to flatten the hair, measure the maximum head breadth in the coronal plane.



TABLE 32

Head Breadth (mm)

Number of Subjects : 312
 Mean : 154.5
 Standard Deviation : 5.7
 Coefficient of Skewness: -0.16
 Coefficient of Kurtosis : -0.20
 Range of Data : 137-169



1st percentile	141
3rd percentile	143
5th percentile	145
10th percentile	147
15th percentile	149
20th percentile	150
25th percentile	151
30th percentile	152
40th percentile	153
50th percentile	155
60th percentile	156
70th percentile	158
75th percentile	158
80th percentile	159
85th percentile	160
90th percentile	162
95th percentile	164
97th percentile	165
99th percentile	167

TABLE 33

Inter-Elbow Breadth

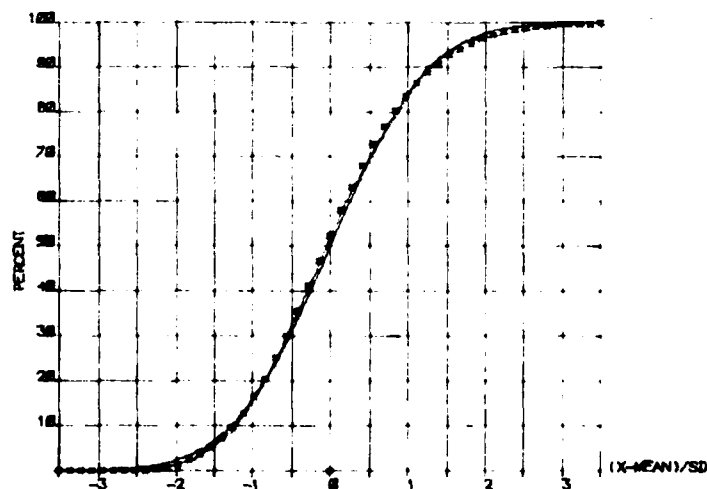
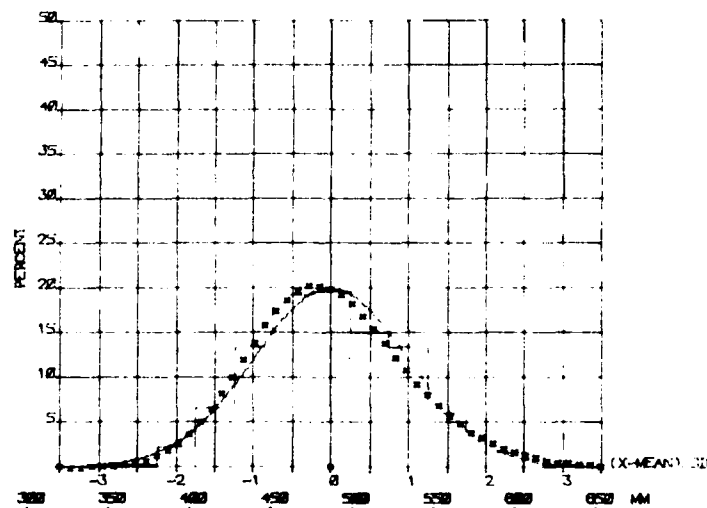
The subject sits erect, upper arms vertical, elbows lightly touching the sides, forearms extended forwards horizontally and palms resting lightly on the support bar. With the sliding calipers measure the horizontal distance between the most distal projections of the lateral epicondyles of the humeri.



TABLE 33

Inter-Elbow Breadth (mm)

Number of Subjects	: 312
Mean	: 486.8
Standard Deviation	: 47.6
Coefficient of Skewness	: 0.39
Coefficient of Kurtosis	: 0.16
Range of Data	: 372-658



1st percentile	389
3rd percentile	404
5th percentile	413
10th percentile	427
15th percentile	438
20th percentile	446
25th percentile	453
30th percentile	460
40th percentile	472
50th percentile	484
60th percentile	496
70th percentile	509
75th percentile	517
80th percentile	526
85th percentile	536
90th percentile	550
95th percentile	571
97th percentile	585
99th percentile	610

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